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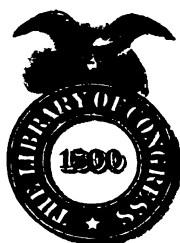
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# FARMERS' REGISTER:

A MONTHLY PUBLICATION,

DEVOTED TO THE

IMPROVEMENT OF THE PRACTICE,

AND

SUPPORT OF THE INTERESTS

OF

**AGRICULTURE.**

And he gave it as his opinion, "that whoever could make two ears of corn, or two blades of grass, to grow upon a spot of ground where only one grew before, would deserve better of mankind, and do more essential service to his country, than the whole race of politicians put together."

SWIFT.

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EDMUND RUFFIN, EDITOR AND PROPRIETOR.

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# THE FARMERS' REGISTER.

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No. 1.

EDMUND RUFFIN, EDITOR AND PROPRIETOR.

## UNION OF THE CAROLINA PLANTER WITH THE FARMERS' REGISTER.

By an arrangement, just completed, between the proprietors of the Farmers' Register and the Carolina Planter, the two publications will be united from this time forward, and the subscribers of the Carolina Planter will be supplied, instead, with the Farmers' Register, issued, however, in weekly form of publication. This change of the times of issue has been adopted upon the advice of judicious friends of the work in South Carolina, and also because, agreeing in this respect with the Carolina Planter, it was supposed it would be more acceptable to its readers and patrons. The monthly form of the Farmers' Register will continue unchanged, as heretofore. The subscription price and conditions for both the monthly and the weekly publications will be the same, (as stated at full in the Conditions of publication of the Farmers' Register,) and any subscriber who is supplied with either of the forms, and should prefer the other, may have the change made at the end of any month, by sending a post-paid order to that effect.

To each of all the original subscribers to the Farmers' Register, to whom we are now indebted for their generous support for all of nine volumes, (and of whom nearly 400 names still are left on our list,) we shall send an extra copy in this new form, as some evidence of their kind and sustained and sustaining favor. This of course will not apply to those among them who have before chosen to avail themselves of some equivalent privilege or premium, offered by the conditions. We hope that it will be acceptable to these, our oldest and best friends, to receive thus gratuitously the weekly publication, for more frequent and therefore more inviting reading, while their regular monthly numbers will contain all the same agricultural matter, and somewhat more, for binding, to be placed in their libraries.

The agricultural matter of both publications will be the same. But some articles of the monthly form must necessarily be omitted in the weekly publication, and these will be such as are not strictly of an agricultural character. On the other hand, the weekly sheet will contain a summary of news, and also some advertisements, both of which will (as heretofore) be excluded from the monthly publication.

Each of these forms of publication has its earnest advocates, and opposite advantages; and to each there are also strong objections. In issuing both, we shall incur much addition-

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al trouble and expense; but, at this sacrifice, and by offering the choice to all subscribers, we trust that we may finally please all.

To furnish a summary of weekly news, in the manner which will be attempted in the weekly sheet, will cost more labor than to fill five times as much space with other and original matter. But without such labor, any such summary must be stale and worthless; and so long as we may offer such a dish as part of our bill of fare, it will be our care and pride to have it composed of the best ingredients, prepared in the best manner, and served up to our customers as fresh and new as a weekly supply will permit.—Ed. F. R.

## EXPERIMENTS WITH BONE MANURE.

To the Editor of the Farmers' Register.

*Fairfax county, Va. December 10th, 1840.*

On reading the article headed 'Extraneous Manures,' page 589, October number of the Farmers' Register, I am reminded of my promise to give you the result of my experiment with bone-dust, or more properly speaking, *crushed bones*, as a manure.

My first application of bone manure was on turnips, in 1838; the result, so far as relates to the first crop and the expense, is stated at page 152-3, vol. 7th of the Register. I have therefore only to add the results of two years' additional experience in the use and effect of bone manure in comparison with stable or other putrescent manures produced on a farm.

In order to ascertain, with as much precision as I could, the requisite quantity of bone per acre, as well as to be precise in its application and comparison with other manures, I laid off an acre of ground which I designed for turnips, and divided it into eighty-one equal parts by cross furrows at the proper distance. Upon two-thirds of the ground thus laid off, a good two-horse cart load of stable or farm yard manure was dropped in each square, which of course was manuring at the good rate of 81 loads per acre. To other parts of the ground, crushed bones, from the Roxbury Mass. mills, were applied at the rate of 15, 20, 25, 30, 40, 50, 60, 70, and 81 bushels to the acre, pure as they came to me, without adulteration or admixture of any kind. On the residue of the acre, a compost, consisting of the summer scrapings of the cow yard, without straw or litter of any kind, with only 8 per cent. of bone, was applied at the rate of 12 loads, of 25 bushels each, per acre. The ground had previously been well ploughed early in the spring, and a dressing of sixty bushels of good fresh lime had been applied on the furrow, immediately preceding the first harrowing. The farm-yard manure was regularly distributed on the ground and lightly ploughed in as fast as spread; having previously, as well as every other part of the ground, received a good dressing of plaster of Paris.

The bone manure and compost were harrowed in with a heavy two-horse harrow, and the ground so rested until the appearance of rain, the 8th of August, when, immediately preceding a shower, the seed were sown and *well harrowed* in. The rain which fell was not a soaking one, but a transient summer shower, much of which ran off, especially from that portion of the ground to which the bone manure had been applied; the part manured from the farm-yard, presented a rather more uneven surface, one consequently more favorable for the reception and retention of rain, which fact was well established by an examination of the ground the next morning, when I found that the moisture had penetrated at least two inches deeper in the one case than in the other, and which circumstance gave to that portion of the ground manured from the farm-yard a very decided advantage over the bone manure for the first two weeks, or until ample rain supplied sufficient moisture. The ground upon which this experiment was made is high and dry, and was, at the time, exceedingly poor stiff clay land, upon which I had in vain, two years in succession, tried to produce black-eyed peas.

The growth of turnips on such parts of the ground as had received not less than sixty bushels of crushed bone, was quite equal in the end to the best growth when the farm manure was used at the rate of 81 cart loads to the acre; whilst the growth on all smaller allowances of bone, was inferior, and most so where the least quantity was used. But on that portion of the ground which was dressed with the *bone compost*, as above stated, the growth throughout was decidedly superior to any other part, and the product, at maturity, was at least one third more than was produced on an equal quantity of the ground manured from the stables. The succeeding year, 1839, the entire acre was planted with sugar beets, and every part treated precisely alike, viz.: the seed drilled and covered by hand with a light compost from baskets; the crop, owing to an unfavorable season and neglect of *early weeding*, was nothing extraordinary, though decidedly best where the bone manure had been applied. The beet crop was followed, this year, (1840,) by Italian spring wheat. The growth of straw was most splendid, but like our winter sown wheat and rye, this season, was almost ruined by the rust; but in this, the third crop in two years from one manuring, the superiority of the bone manure was more apparent than ever, and as before, on that portion of the ground to which the *compost* was applied was greatly superior to every other part, and even on those parts of the ground where the *smaller* portions of bone had been applied, the straw was as heavy as it was on the ground which had received manure from the farm at the rate of 81 loads per acre. The wheat stubble was not grazed after harvest, and although the season was very dry, the volunteer red-clover and crab-grass, *following a spring crop*, was so rank as to make it exceedingly difficult to turn it under, with a first-rate two-horse plough, with the usual appendage of a heavy chain! Thus affording incontestable proof of the, as yet, undiminished effect of the bone manure under most severe cropping.

Of the compost above described, I applied, at the rate of 100 bushels per acre, to a poor piece of newly mowed meadow, (in 1838;) the succeeding

crop was more than doubled by the application; the crop of the present year (1840) was still better than the last, and from the after-growth this year, I have little doubt of further and progressive improvement for several years to come; as the coarser particles of the bone are not yet entirely decomposed. A piece of wheat on which a like proportion of the *bone compost* was applied, and harrowed in with the seed, was greatly benefited by the application; and the clover which followed the wheat was 100 per cent. better than that on either side of the bone compost belt, which ran through the field, although the other parts of the field were similarly treated, excepting only the addition, of not more than at the rate of 24 bushels of bone manure to the acre. The conclusions, then, to which my mind is brought by the foregoing experiments are,

First, That when applied at the rate of from 50 to 80 bushels per acre, on the exhausted lands of Virginia, one bushel of crushed bone, is more than equal to one cart-load of 25 bushels of good farm-yard manure, in its effect upon the first crop. Secondly, That the effect of bone manure is more durable than that of any putrescent manure usually produced on a farm. Third, That when applied to land which is in *good heart*, the effect is much more powerful than it is on *very poor* land. Fourth, That when combined with manure and applied in the form of compost, the effect, both instant and remote, far exceeds any other application of the components when separated with which I am acquainted or ever witnessed. And lastly, if stable manure has to be *purchased* or even hauled *more than half a mile from your own stables*, bone manure at fifty cents per bushel, the price it cost me delivered on the farm, is the cheapest manure of the two. Yours, THOMAS AP C. JONES.

#### DESCRIPTION OF THE AFRICAN POTATO; READ BEFORE THE BARNWELL AGRICULTURAL SOCIETY.

From the Carolina Planter.

The *yam massicot*, or potato of St. Domingo, and supposed to be a native of Africa, is raised in the garden of Mr. John Michel, of Charleston, from cuttings of the fruit. It does not produce in the earth, but grows upon a vine which runs upon trees to the height of twenty or thirty feet. Each vine bears, more or less numerously, from twenty to thirty potatoes of the kind here shown. Many of them are twice or thrice the size of these, while others are smaller. The vine is rich and luxuriant; the fruit issues from the several joints, probably, for 10 inches apart. The leaf, which seems to grow also at the joints, is large and beautifully shaped like a heart. The plant readily grows in the open air, and, it is thought, would be particularly fruitful in a warm, sandy region, like Barnwell, if planted with a southern open exposure, against woods upon the north. The woods would serve for the vine to run upon, which, in the garden of Mr. Michel, is planted within a foot of the tree which supports its fruit. This potato is described as being superior in flavor to the Irish potato. It is not sweet. It is cooked in the same way with all other potatoes—may be boiled, baked or roasted, and when cooked is said to be of a bright gamboge color. S.

## CULTIVATION OF THE VINE IN THE WEST.

From the Western Farmer.

I resolved to be present at the vintage this fall, at some of the many vineyards in our vicinity, and accordingly on Wednesday the 16th ult. rode with a small party to one owned by Mr. Longworth, but leased to Mr. Mortimer, who is his own *vigneron*. It is kept in fine order, every thing neat and business-like. There are about seven acres planted, only about two-thirds of which, however, is yet in bearing. The varieties found to suit best are the Catawba, Isabella, and black cape. The two first Mr. M. finds to be not such regular bearers as the last, but always a part crop, and about every third year a very full one. The cape rarely misses a fair crop, but the wine requires age, and when kept seven or eight years almost equals Catawba. The Isabella makes a good wine, and is best used the second year, when it is somewhat of a *sweet wine*. The Catawba is decidedly the best grape we have for wine-making, being on an average, very productive, the yield of juice unusually great, and the wine at three years old superior to any old Madeira I ever drank—wanting its fiery taste, and surpassing it in richness of flavor. Its body is such that I feel confident it could be transported to any distance without any necessity for the reinforcement which foreign wines receive previous to their being shipped.

This year the crop is scarce an average one. Previous to the late cold rains in June it promised well; but after that, many of the berries, to the extent I should think, of one half, dropped off. The young wood has ripened well, so that next spring's cuttings will be good. This is a matter of much importance—cuttings carelessly made, out of indifferently ripened wood, and left exposed to dry for any length of time after they are cut, as is too frequently the case with those who prepare them for sale, never can do well, nor make healthy, thrifty vines, even if they do grow.

T. A.

## A CURIOUS FACT.

From the Southern Cultivator.

A fact was mentioned to us, which was certainly unknown, not only to ourselves, but to all the planters of this section of the state, with whom we have conversed on the subject. It is, that the first suckers from corn, if left undisturbed, will always produce ears on the stalks, similar to the parent stalk, and not an abortion on the ends, as we so often see in our fields; and in confirmation of this, we were shown four dried stalks, which had grown in such close proximity, as to have all the appearance of being the parent stalk and suckers. It was out of the ground, and divested of soil, but the mass of roots was so thick that we could not ascertain positively, without separating and thus destroying the specimen, (which we were not willing to do,) whether they proceeded from one or more roots—the appearance decidedly was, that the whole sprang from one. We counted on each of these stalks two large ears, with no greater difference between them than might be found between adjoining stalks. Col. Williams

first mentioned the fact to us, and in conversing on the subject before one of his overseers, (who had, by-the-by, been with him a number of years,) the latter observed that he thought every person knew it. The abortions we have on our suckers are attributed to their not being the original or first, but such as had been thrown up a second time by the plant, which is said not to produce ears at the sides, but merely a few scattering grains on the tops of the stalks. We have mentioned these facts to many of our planters in this section of country. None have made observations sufficiently accurate, to speak positively on the subject, though the general opinion is, that such is not the case in the lower country. Is it not one of the peculiarities of the corn cultivated by Col. Williams?

## NATURAL HISTORY OF THE TOCKAW-HOUGHE.\*

To the Editor of the Farmers' Register.

Smithfield, Nov. 24th, 1840.

The tockawhoughie is mentioned by Capt. Smith, in his History of Virginia, as one of the indigenous productions, forming an important article of diet among the aborigines. This plant is still found throughout eastern Virginia, but from its comparatively rare occurrence, its singular habitude, and from its belonging to a class of plants rarely studied except by the professed botanist, it is generally a *lusus nature* to those who accidentally disinter it. A few remarks upon its natural history may therefore not be unacceptable to the readers of the Register.

The tockawhoughie is one of the fungi, or mushroom family, belonging to the genus *tuber*. Two species of this genus, the *T. cibarium* and *T. albidum* are well known in Europe, as the black and white truffle, and are highly prized as rare delicacies by gourmands. In this country and in England, they are small, but in Italy they attain a diameter of several inches, and weigh from 8 to 14 pounds, [ounces?] The tockawhoughie like all the other species of this genus, is entirely subterranean, and totally destitute of roots, stem, leaves, or other appendage to connect it with, or to absorb nourishment from the atmosphere, or earth, and is apparently as isolated in, and unconnected with its mother soil, as a rock or pebble. From the absence of all surface indications of their existence, in Italy, where one species of this singular genus is much sought after, the diggers are accustomed to train dogs to hunt them by their scent, and to indicate their presence by scratching the ground immediately over them. The tockawhoughie is generally of an elliptical form, varying in diameter from one to four inches.† Like all of the lungiferous plants,

\* Usually, but erroneously called Tuckahoe. Tuckahoe, is a corruption of the Indian word, 'Tucahowe,' which literally means, "the place where deer are shy," and was originally used to designate a locality.

† Owing to the difficulty of obtaining specimens fresh, I have not been able to determine the species satisfactorily, but think it will prove to be the *albidum*.

‡ We have frequently seen larger specimens, and, if remembering correctly, in some cases as large as a man's head.—ED. F. R.



it prefers a moist, shady, situation.\* It consists almost wholly of *fungin*, a white substance, discovered by Braconnot, and found by him to be common to the mushroom family. Fungin in appearance resembles the fecula of the Irish potato, and in its composition is analogous to animal matter, but in its nature combines the properties both of animal and vegetable substances. In its natural condition it is indigestible, but by cooking it is rendered quite digestible and highly nutritious.

C. B. HAYDEN.

#### PROFIT OF PEAS AMONGST CORN.

From the Agriculturist.

Col. J. W. Clay contends that his pea crop is worth more this year, than the corn on the same land, and he informs us that his corn crop was heavy. From our little experience in this matter and what we have gleaned from others, we are satisfied that peas can be advantageously raised in every corn field.

#### THE CURCULIO AND FRUIT WORMS.

From the Cultivator.

*Messrs. Editors*—In the September number of the 'Cultivator,' (page 136,) you say in answer to a correspondent, that "the worm in the apple as well as in the plum and cherry, is a species of *curculio*." Also, that "the worm with the fruit, falls upon the ground, in which the worm takes up its abode in the *chrysalis* state, until revived and changed by the spring, it issues a perfect insect."

I am well convinced there is a mistake here, in two particulars: 1st, as to the worm in apples being a *curculio*; 2d, as to the *curculio* continuing in the ground till spring.

In 1831, seeing it stated in all the books that the *curculio*, in its *chrysalis* state, remained in the ground during winter, I undertook to verify the fact by actual experiment. The result was communicated to the 'New-York Farmer,' (vol. iv. p. 178-9.) But as many of your readers have probably not seen that book, you may do a service by publishing an extract from it.

"I put some moist earth into a tumbler, about the first of June, and placed about twenty small peaches containing worms, upon the earth, and covered the tumbler with a piece of glass. June 30th, the worms had all left the peaches and had all crawled into the earth below. July the 7th, the worms had divested themselves of their skin, without having formed a shell or cocoon, and were nearly changed to bugs. At this time they were white, and showed upon the breast the soft rudiments of the proboscis, legs, and wings. These parts had not attained their full size, and appeared immovable. One insect, however, had completed his metamorphosis and was a perfect bug, of a mahogany color. All have since left the earth of their own accord having finished their change, and are now [July 19th] creeping about the tumbler and feeding on a plum leaf.

\* Our word *pocassin*, is an alteration of the Indian word, "pduckassin," the radical meaning of which is the "place of balls." May not this word, in its original application to low wet lands, have had reference to them as the habitation of the *Tockawhoughé*?

On the 10th of July I opened the ground under a peach tree and found the insects in great numbers, from two to four inches beneath the surface, in all stages of their metamorphosis. July 19th, I found one in the earth under an apple tree, but could find none under peach trees. It appears then that this insect retreats into the earth about the first of June, where it divests itself of its skin, and changes into a bug before the 19th of July, by which time it leaves the earth. What becomes of the bug from July to May following, remains to be discovered."

"The *curculio* is not the only insect that produces the worm in our fruits. I stated above that about twenty peaches were placed in the tumbler. In the earth under them were six small, oval cocoons, thick, strong, and smoothly spun, which contain worms that manifest no approach toward a change. The same cocoons are also found under peach trees; The worms in these envelopes are different from those of the *curculio*; they are smaller, they are white throughout, while the larvæ of the *curculio* have orange colored heads. There is reason for the belief that the larvæ of the *curculio*, all or most of them, leave the various fruits in which they are deposited as early as the beginning of July, and that the worms found in fruits after that time, have a different parent. Some years ago, I preserved a worm from a Vernal pear, which produced a *gray miller*. Last November a worm from a Newtown pippin placed itself in a cavity on a board, covered itself with a web, and remained till April, when it produced a *gray miller* like that produced from the pear."

I continued my observations during that summer, and sent another communication to the 'New-York Farmer' (vol. iv. p. 248,) from which the following is an extract: "I have said there is reason for the belief that the larvæ of the *curculio*, all or most of them, leave the various fruits in which they are deposited as early as the beginning of July, and that the worms found in fruits after that time have a different parent. One reason for this belief is, that after that time very little fruit is left in which their eggs can be deposited, and what little is left is, for the most part, untouched by the *curculio*. Let me present a hasty estimate of cherries, apricots, plums, and peaches, in my orchard; on the first of May last, there were probably 200,000. On the first of July, the number remaining on the trees did not, I am confident, exceed 500, perhaps 20, before the middle of August contained a *curculio*; the rest continued fair. I think it would puzzle Dr. Tilton to say where that vast multitude of *curculios* that deposited 199,500 eggs before the first of July, have deposited them since that time, if they 'continue their ravages,' and equally puzzling it must be to devise a reason why any fruit has escaped—why only 20 eggs should be deposited and 480 peaches left undisturbed, if this vast swarm of insects has continued its operations ever since the first of July. It may be said that they resort to apples and pears. But before the first of July the greater part of the apples had also disappeared from the trees; most of those remaining have continued since untouched by the *curculio*. The worms found in them are not the larvæ of that insect. I have not succeeded in finding a *curculio* in a pear, at any time. The

only worms that I have found in pears, [and I have taken pains to collect a considerable number this summer,] are the larvæ [I believe] of the *gray miller* mentioned in my former communication. They resemble the larvæ of the *curculio* in having orange colored heads, but differ from them by being larger, and having a slight tinge of scarlet or brick color upon portions of the body. Instead of popping into the ground, they crawl under the rough bark of the trees, inclose themselves in a web, and are transformed into a chestnut colored chrysalis. Placed in a tumbler with moist earth, they form a web upon the cover of the tumbler, and there undergo their change. As none have yet left the chrysalis state, I suppose [as was the case with those which I have before preserved] that they do not complete their metamorphosis till spring. All the worms found by me in apples, since the first of July, have been similar to those in the pear."

An excellent observer, David Thomas of Cayuga, maintained the prevailing opinion in regard to the worms in our fruits, and with a view to show that I was incorrect, he took "a worm with an orange colored head, from a bell pear, and put it in a tumbler, with moist earth," on the fifth of August. On the eighth of August he took from apples "three more worms with orange colored heads, and which appear to be the full grown larvæ of the *curculio*—another similar, but only half as long—and two others resembling the former with brown heads, but 100 [10?] times less in bulk than the first kind. Viewing these last under the microscope, I am satisfied that they also are larvæ of the common *curculio*, thus far confirming Dr. Tilton's remark, that this insect 'continues its ravages from May until autumn.'"—*New-York Farmer*, vol. iv. p. 205.

In a subsequent communication, in October, with his accustomed candor, he says, "N. Darling may be interested to learn that the worms which I confined, 'with orange colored heads,' left the moist earth, and encased themselves in a web under the cover of the tumbler. Soon after one of them came forth a *dark gray miller*; and I conclude there was no *curculio* amongst them. We are therefore indebted to him for the interesting discovery that the larvæ of several insects feed on our fruits; and it is now rendered at least probable that Dr. Tilton ascribed too much of this mischief to the *curculio*."—*N. Y. Farmer*, vol. iv. p. 281.

With these facts before us I think we may safely conclude that the worm in apples is a larvæ of a *gray miller*, and not of the *curculio*, which is a bug. Also that the *curculio* leaves the ground in a short time after entering it. Its winter retreat has not, within my knowledge, yet been discovered.

If your correspondent will look under the rough bark of his apple trees in October, he will find a great many of the worms from his fruit, which have shut themselves in with a web, and are transformed into a chestnut colored chrysalis. If he will carefully preserve them, he will find them coming out a *gray miller*. By simply scratching off, or rather picking off the rough bark [the scales or flakes, I mean] a vast multitude of these insects may be destroyed—not all, however, for they resort to other places of concealment, such as crevices in boards, posts and rails. Yours, very respectfully,

N. DARLING.

New-Haven, Conn., September 19, 1840.

#### REPORT OF MAJOR GWYNN ON THE DRAINING OF THE SWAMP LANDS.

To the president and directors of the literary fund of North Carolina:

*Gentlemen*:—I have the honor to report to you the result of the operations since the drainage of the swamp lands was committed to my charge.

The feasibility of the undertaking has been so fully and clearly established, by former statements to the board, (particularly by the report of Mr. Shaw,) as to render any comment from me unnecessary on the present occasion. I shall therefore proceed to the subject immediately before me.

The only tract of land, owned by the state north of Pamlico Sound, sufficiently elevated to afford a fall for its drainings, is situated on the high grounds which divide the waters that flow into the Albemarle from those that run into Pamlico Sound, lying between the angles formed by the meeting of the boundary lines of Washington, Hyde and Tyrell counties, near lake Pungo, which it embraces: it extends to the west shore of Alligator lake and five miles to the south of lake Pungo; on the north it includes a portion of lake Phelps, and contains, exclusive of the area of the lakes, 64,500 acres. A reference to the map herewith submitted will give a more perfect idea of its location, and exhibit, both in plan and profile, the main and lateral canals by which it is proposed to drain it. This tract is a portion of a swamp containing about a hundred thousand acres, an idea of the formation of which may be had by conceiving it to form, what in reality it does, a large basin, filled with decomposed, putrescent vegetable matter, saturated with water, confined and prevented from running off by an impervious subsoil and an embankment, or elevated strata of clay and sand extending nearly all around it, not sufficiently dry for tillage at the extremities and higher parts at any season of the year. When over-saturated, as is the case in the winter and spring and sometimes in the summer, the surplus water flows into Alligator and Pungo Lakes, and into Lake Phelps from the south—towards Alligator the descent of the surface from the south is three feet and a half from the verge of the swamp or basin. The redundant water, after filling the lakes to overflowing, is discharged into Alligator, Pungo and Scuppernon rivers over the surface and by percolation. In dry weather, the loose, spongy soil of the surrounding swamps draws the waters again from the lakes; and so great is this attraction upwards as well as horizontal, that the very surface of the swamps is kept wet during the greatest drought and hottest summer sun—thus through the medium of this flaccid soil, the lakes and swamps reciprocally supply each other with water as there may be a preponderance in either; or, to render the description still more plain, this swamp (and so nearly all of the swamps in the state) may come under the denomination of *land-locked bogs* or *morasses*, such as "are neither produced by water rising in themselves, nor by that of springs in the adjoining banks, but become wet by an accumulation of rain water stagnating on an impervious subsoil through which it can have no descent, and being surrounded by higher ground through which there is no vent or natural discharge for the water."

The plan of drainage is, therefore, obvious, and

consists in cutting through the *high grounds* or elevated strata that surround the swamps and pen up the lake waters, drains, of sufficient capacity to draw off the surplus rain water which in this great basin, or laboratory of nature, has contributed, and, indeed, from its agency, in a state of stagnation, in nourishing, we may say generating, those aqueous plants and trees from the decomposition of which the earthy matter of the swamps is entirely composed, may be said to be the cause of their formation. In accordance therefore with this plan, two canals, denominated *main drains*, have been laid out, one leading from Pungo lake to Pungo river, the other leading from Alligator lake to Rutman's creek, a tributary to Pungo river. The former, which we will call Pungo canal, is six miles, seven hundred and seventy-four yards in length, with an average width, at bottom, of twenty-two feet, an average depth of six feet, and a fall in the bottom of twelve and a fourth feet. The latter, the Alligator canal, is five miles, fourteen hundred and fifty six yards long, an average width, at bottom, of thirty feet, an average depth of seven feet, and a total fall of ten feet. These canals will reduce the waters of each lake four feet, and are of sufficient capacity and fall to draw off all the water that may be thrown into them by the lateral canals traced on the map as necessary for the farther facility of draining; the immediate effects of these canals will be to render a belt of land adjacent to them as well as the land around the lakes, susceptible of thorough drainage and cultivation.

At the time I took charge of the work, in April, 1839, the season for hiring hands by the year had passed, and the competition for laborers, by the month, from the Wilmington and Raleigh and the Gaston and Raleigh Rail Roads then in rapid progress, rendered it impossible to procure a sufficient force to prosecute the work with the energy that was desired. The two main canals were, nevertheless, put under contract and commenced; but owing to these causes, not much progress was made during the past year. At Christmas, the season for procuring laborers, the contractors were enabled to obtain a large force, and the work has since progressed steadily and rapidly, uninterrupted even by sickness of any kind. Nearly one half of the Alligator canal has been completed. The tributaries have been commenced, and on the 20th of October the water of Pungo lake was let into Pungo canal. All the effects which were anticipated of drainage on its borders and reduction of the lake water, have been realised; enough has already been accomplished to inspire confidence and to remove all doubts and apprehensions (if any exist) as to the success of the work. There are now ready for sale 8000 acres of land bordering on Pungo lake, on the west and north west. This tract is covered with a heavy growth of cypress and maple, and has been pronounced, by competent judges, unequalled by any lands in the state; and such also is my opinion, after having contrasted it with the rich lands of Pasquotank and Perquimons, and with those of lake Phelps and Mattamuskeet. In addition to this, there are 7000 acres of prairie land (the growth formerly cypress, now cane and bamboos, bordering on the canal, and on the northeast side of the lake, that may also be offered for sale. In confirmation of the productiveness of these lands, of which no one

acquainted with them entertains a doubt, I would observe that similar lands in the neighborhood, but of inferior quality, subjected to the most ruinous system of cultivation for more than sixty years in succession, are still productive, yielding when the seasons are favorable to the imperfect plan of drainage, (which with but few exceptions prevails every where) from six to eight barrels of corn per acre.

I would respectfully recommend some immediate action towards bringing these lands into market; the first step, that of laying them off into sections, is one of much labor, and can be most easily performed at this season.

During the ensuing year Alligator canal will be completed, and also some of the tributary canals, and before the expiration of two years, we expect to complete the entire system of drainage in reference to this extensive tract of land. My estimate for the accomplishment of this object will consume the whole amount (\$200,000), appropriated for this purpose, and unless some further appropriation is made, the only fund applicable to an extended system of drainage will be the proceeds of the sales of the lands—which, if for cash, would be ample (together with the amount of sales accruing from time to time on account of other lands prepared for market) to drain all the swamp lands which the state owns. This will more readily appear from the following estimate, based upon prices considerably lower than those affixed to the lands by some of the most competent and experienced judges who have examined them. Under this view, preferable to exciting expectations that would not be fully realized, I will assume the low price of \$6 per acre, and the number of acres which the present appropriation of \$200,000 will drain to be 60,000 and even at this low estimate, we have a sum exceeding the cost of drainage by \$160,000. Applying this ratio between the cost of draining and the income arising therefrom to the million of acres owned by the state, the sum although enormous would fall short of the realization.

This result, so beneficial and cheering, in itself calculated to inspire confidence and recommend a steady and vigorous prosecution of the work to the end, is only one among the many beneficial effects which will grow out of its completion. Some of the effects to which I allude, and confidently calculate upon, have been caused by precisely similar operations in Great Britain, and are so applicable, although referring to land in a partial state of tillage, that I beg, in lieu of my own words, to substitute those of the engineer appointed by the British parliament to report upon the mosses and marshes of that country. He says the climate is rendered more healthy and genial to both animal and vegetable life, by the removal of stagnant water, and the prevention of those noxious exhalations arising from large tracts of moss and marshy ground, where the herbage gives but little nourishment and only promotes disease. Since the introduction of drainage into this country, the health of the inhabitants has been greatly improved; agues and other distempers being now comparatively unknown that were formerly so frequent, occasioned by the humidity of the soil, and consequent impurity of the atmosphere, producing that miasma which so often proves fatal. The produce of the harvest, for-

merly precarious on such land, becomes, by drainage, ample and productive in quantity, and the quality of the grain is improved also. If land that is in tillage remains wet, every manure that is applied to it loses its effect to a certain extent, and fails to produce that abundant crop which a less quantity would yield, if such land were laid dry.

In wet land, seasons of tillage are lost, the labor is greater and the return less. The produce is always scanty and inferior in quality; but when land is properly drained, every exertion of good husbandry is attended with success, and the farmer thrives where his predecessor was ruined. By drainage alone, it is wonderful to see the verdure that soon takes place; a bog of the worst kind after being thoroughly laid dry (without any other melioration whatever) will spontaneously produce so many new and fine grasses, the seeds and roots of which hitherto laid dormant, owing to the superfluous moisture, but now spring forth and afterwards continue to flourish and increase. The rushes that formerly occupied the whole surface, soon decline, and better grasses rise in abundance.

In addition to these many beneficial effects, the advantage of draining the swamp lands that lay scattered over the whole of the eastern portion of the state, from the Roanoke river to the Wackamaw, and from the falls of the rivers to the seaboard, are of great importance in other respects.

No scheme has been or can be devised, that will so effectually stay the tide of emigration which flows like a mighty torrent from this portion of the state. The poor man who gains a scanty subsistence by the "roundshave and broadaxe," who hovers around the home of his nativity, until he exhausts the last pine tree, and is finally driven off penniless to the far west to seek a home among strangers, will here find an asylum; all his dreams of wealth and plenty can be realized in his own beloved state. A few acres of the land which from his childhood he has looked upon as a wilderness, a fit abode only for ferocious wild beasts and disgusting reptiles, now invite his labor and will reward his industry.

The health and the morals of the people will be improved, the coffers of the state filled, the community will be benefited by a greater supply of useful commodities—in short, the benefits that will result from a general and complete system of drainage, to the agricultural and general improvement of the state, are so many that the few instances (if any there be) in which they are neither seen nor acknowledged, can only proceed from prejudice.

I herewith present a map of the state lands in Carteret county, which exceed in quantity and are equal in quality to the tract we are operating upon, and can be drained at a less price than perhaps any other lands of the same extent in the state.

The tract lying between Core Sound and Neuse River at their junction contains 65,000 acres; its elevation is 12 feet above Long and Nelson Bays, and other small streams, into which it can be readily drained. This tract is mostly an open prairie; the soil a deep vegetable mould. There are two other tracts which were surveyed; one containing 12,000 acres, situated in the Newport Pocoson, between Newport River and the Clubfoot

and Harlow Canal. The other 16,000 acres in extent, lays north of Lake Ellis, at the head waters of Hunter's Creek and Newport River. Both of these tracts are also of superior quality, and are susceptible of being drained at an expense that would amply repay the state.

But the improvement that offers more immediate benefits and direct returns than any other is the drainage of Lake Mattamuskeet; and if the state's title to the lake can be established, it should, in my opinion, after the completion of the work in which we are engaged, be the first to command the attention of the Board.

I am gentlemen, very respectfully, your obedient servant.

WALTER GWYNN, *Civil Engineer.*

Raleigh, 16th Nov. 1840.

#### AN IMPROVEMENT IN FATTENING HOGS.

From the Southern Cabinet.

Maury County, (Tenn.,) March 23.

*Mr. Clayton:*—It is manifest to every person that there is a great lack of economy in the wasteful manner we commonly feed our stock in Tennessee. I am satisfied that no one is more guilty in this respect than I am myself. I believe, with a little trouble and trifling expense, we might save full one half the provisions we feed to our stock every winter. In these hard times that would help very much to get us out of our embarrassments.

So fully was I convinced of this that I determined the past winter to try to make an improvement in feeding my fattening hogs. My practice heretofore was like my neighbors' generally, and I believe almost every person in Tennessee fattens his hogs in the same way. I usually put my hogs up in a small lot with water in it, and throw them as much raw corn in the ear as they will eat. This with a little salt now and then, is all they get, and in the course of six weeks or two months they are regarded as in good pork order, and ready for the knife. The last fall my hogs were put up in the usual way in September. The number I do not now recollect. But I observed particularly the amount of corn they consumed each day. They were fed by throwing the corn to them raw in the ear. The corn was carried in a large cotton basket, which I supposed would hold about two bushels. This nine times full was given them every day. It was about as much as they would eat. I had previously engaged Col. D. Loney to have some large kettles cast at his furnace in Wayne, of the size and dimensions that would accomplish the objects I had in view. My design was to boil all the corn I gave my hogs, and by having the kettle of suitable dimensions, to use it to scald them in when killed instead of a trough or hogshhead. The kettles were not ready until I had fed my hogs some time. I at length got one, set it in a very simple furnace, which did not take thirty minutes to construct; and from that time until my hogs were killed they were fed three times a day on corn well boiled. The corn was taken to the kettle in the same basket and put in it until it was full, the kettle then filled with water and a fire kindled under it. This was sufficient. If at night, it would be well cooked by morning; and if in the morning, it would be ready by the middle of the

day. One not accustomed to it would be surprised to see how little fuel was necessary. A billet not larger than a common fence rail was entirely sufficient to cook one mess. When the kettle was emptied it was immediately filled as before, and a small armful of any wood was sufficient to cook it suitably by the next feeding time. In this way it required but six baskets full in the day. Before I got the kettle it required nine. Here was a clear saving of thirty-three and a third per cent. If one should have a lot of hogs that would ordinarily consume in fattening one hundred and fifty barrels when fed raw, he would save by the process of boiling, fifty barrels, which would twice over pay the price of the kettle. Mine, I believe, cost twenty-five dollars. Had I got it when I first put up my hogs, I am certain I would have saved fifty barrels of corn.

At killing time the kettle was of great convenience. Its oblong form makes it very suitable to scald in. Formerly the preparation for killing was a great trouble. We would make a large heap and put on it many rocks, and after it had burnt so as to heat them they were put in a hog-head of water to heat it—and after they were removed the water was ready for scalding. All this took much time, and was a great trouble. Now with the kettle quite a small fire is sufficient, and when once heated it can be kept in a good scalding condition throughout the whole day; you have nothing to do but make the water boil, and then put in the hog, and in a few minutes it can be taken out, and you may put in another, and so on until you are done. There is no necessity for delay. Keep the fire constantly burning, and as fast as you can kill you can scald. This I found to be a great saving of time and trouble, and a sufficient reason of itself to justify the purchase of a kettle.

After my hogs were slaughtered the kettle still continued to be of great use. It is excellent to prepare food in for milk cows and any other stock that are fed on corn.

I have often heard it said that one fact is better than many theories. Here then is a fact. I have tried it, and saved precisely one-third of corn—more than enough the first winter to pay the cost. If any one should doubt it, I would advise him first to try it, and I am sure he will then believe.

WILL. E. KENNEDY.

#### CHRYSANTHEMUMS.

From the Western Farmer and Gardener.

*Messrs Editor* :—Through the medium of your paper, I would propose to address the votaries of Flora on behalf of a much neglected, though beautiful flower, the chrysanthemum. It may be disputed, and with propriety, that any plant more amply repays the care of its cultivator, even supposing that it possessed no other qualifications than the splendor, variety of color and duration of its flowers;—but when we reflect that the Chrysanthemum delights to reveal its gorgeous beauties, when all else of ornament to a garden is gone, its value is incalculably enhanced. The idea has often suggested itself to me, that Flora, not wishing to produce satiety, allows her family to rest during the latter months of the year; but

not being able to dispense with all, she has produced a plant, to bloom at that dreary time, possessing all her most beautiful and brilliant colors of the empire; and forming it so hardy that there is no difficulty in keeping it, and at the same time of easy propagation. Yet this beautiful gift of the goddess, is almost universally neglected. One honorable exception I would make—Chandler of London. The intrinsic merit of the flower, has led him to become its most enthusiastic admirer, and at the same time, its most successful cultivator. To his exertions we are indebted for all the finest varieties in cultivation. His chrysanthemum house presents a more magnificent appearance during November and December, than it is possible to conceive—stand rising above stand, covered with thousands of blossoms of every shade and hue. Let me, then, claim for this lovely flower, that share of attention which its merits entitle it to, and assure your readers, that in its perfection, its place cannot be supplied by any other. A word as to its propagation—this may be done by dividing the roots, by cuttings in the spring or by layers in July. They may be grown in large pots, filled with rich earth, adding a portion of rotten dung to each—or the plants may be grown in beds until fall, when they should be taken up, with balls of earth, entire, and potted, watered and staked, when they may be placed in a warm room, pit, frame or green-house, until they have done flowering, when they may be again turned out.

Let me hope that these few remarks, may call attention to this splendid flower—those who give it that share it deserves, will be well repaid.

JAS. KENNEDY.

#### A SUCCESSFUL EXPERIMENT IN REARING SILK-WORMS.

To the Editor of the Farmers' Register.

*Hyco, Matthews, Dec. 9th, 1840.*

Although personally unknown to you, and not in the habit of writing for the public eye, I deem it the duty of every individual, however humble their efforts may be, to withhold nothing that can in the least benefit the community, or in the smallest degree add to its welfare and prosperity. You have repeatedly requested, in your valuable paper, all who had made any experiments in the silk culture, to make known the result through the pages of your journal. I have made a small experiment this year in raising worms, and having succeeded in producing very fine cocoons under every disadvantage. I wish to lay before you the result, to publish or not as you think proper; and I would likewise wish to make a few inquiries of you for my own benefit and the instruction of all others who have been similarly situated. My husband, like many others, raised a great many multicaulis trees, which he found unsaleable. Rather than grub them up, I requested that he would permit me to make a trial of raising silk, promising to take the trouble of the superintendence myself. My worms (the two-crop white) commenced hatching the 22d of April, about which time we had a few days of warm weather. The largest multicaulis leaves at that time were not larger than a fourpence. The worms of course hatch-

ed too soon, but it was too late when I got them to retard that process. For the first few days, or during the first age, I found food enough for my worms, by gathering every leaf almost as soon as it expanded. This however left them almost destitute as they grew larger, so that I was forced to resort to our native trees, which are more forward in their foliage. I have no means of ascertaining how many worms I had. The eggs were not weighed, but bought by the lump. I have a large garret room, in which I made my experiment, I suppose some 30 feet square. It had no fireplace in it, and a part of it is unplastered. I had no means of warming it. In the very cool season, which occurred the first of May, the dampness penetrated every part of the room, in that long wet season, and frequently the rain would drive in. The thermometer sometimes was as low as 50°, and on one or two occasions the worms seemed to be almost benumbed. In addition to this, their food became very scarce, every leaf was stripped so soon as it appeared on the multicaulis and all the wild mulberry trees in the neighborhood were reduced to the same condition. After my worms reached the third age, I divided them and put a part in a spare bed-room, which I had fed exclusively on the multicaulis. My object was to ascertain if there would be any difference in the silk. Those that I fed on the native tree were colored, with very few exceptions, (I mean the cocoons,) three shades of yellow, some straw color, some bright, some almost nankin color. They were fed on the white Italian, the red, and the common black mulberry, all of which we have in our woods; the latter they would never eat if they could help it. I have seen them devour the stems of the white mulberry in preference to a fresh leaf of black.\* In the room where I fed exclusively on multicaulis there were only three yellow cocoons out of 6 bushels. In the garret room, I think there was one peck of white cocoons out of seven bushels; 13 bushels was the first crop I made. Those who saw them and were judges, said they were beautiful cocoons, a great many of them were as large as some of the mammoth white, which I saw afterwards in Mr. C. Carter's cocoonery near Richmond. I was compelled to feed on wet leaves, from the scarcity of food, and sometimes my worms actually suffered for want of them. None of my worms were diseased; and I do not believe, I had a dead worm among them, I was careful in keeping them clean, and had plenty of room and fresh air.

I raised a second crop of six bushels; out of all these 19 bushels I saved but one barrel of cocoons, owing to the moth cutting out in spite of all I could do. I followed the directions of Clarke, and the 'American Silk-Grower' in endeavoring to cure my cocoons in the sun. The weather proved rainy; and after the moths commenced coming out, nothing would stop them. They would come out while in the oven, and bake to

\* The tree here (as usually) called the "black mulberry," is properly the red (*morus rubra*) of botanists. That which our correspondent speaks of as the "red," is probably a variety of the white mulberry (*morus alba*) which, though originally introduced from Italy, has become perfectly naturalized in Virginia, and exhibits numerous varieties of leaf and of fruit in the seedling progeny.—Ed.

death. I wish to know which is the most approved mode of killing the moths; for I find the sun entirely too uncertain, and after they reach a certain degree of maturity, nothing will have much effect, for I tried both baking and steaming. I intend, the next year, to repeat my experiments, and am convinced the business may be made profitable. I think it is an employment that suits our sex, and should my feeble endeavors be crowned with success, a silk factory or cocoonery for poor widows and children, established in my own county, where they are so numerous, would be an object of my highest ambition. These remarks are penned in great haste, if they can in any way be made useful, you can use your own pleasure as to their publication.

I think there is great injustice done the kind of worm called two-crop white. They are a very hardy, healthy worm, as I think my experiment will show. We can get two crops from them without the risk of retarding, and they produce beautiful silk. Please state in your paper the price of the eggs, and where the pea-nut variety can be procured. If you publish this, let the signature be

E. A. T.\*

#### PROGNOSTICATIONS OF COLD WEATHER FROM BIRDS.

From the Western Farmer and Gardener.

We think a few remarks, under this heading, in each number of the "Farmer," will not be uninteresting. It is a favorite study with us, and one on which we might be apt to dwell at too great length, did we not bear in mind the intention of our work. We shall try to follow up these intentions by only speaking of birds, as friends or enemies of the farmer and gardener—of their migrations, as a test of the climate of different sections of country—and of such insects and plants as are familiar to all. Our object is to induce a habit of observation in our readers, each of whom may be the means of recording matters that may be of importance. Even those confined by their occupations to large cities, have opportunities for studying the great book of nature, which ought not to be neglected.

An old farmer, remarked to me, some weeks ago, that the approaching winter would be a very severe one. He said that, for fifty years, he had observed that whenever the chaff of wheat and other small grain and the corn shucks were uncommonly abundant, thick and heavy, the follow-

\* We are much pleased to be enabled to present to the public this interesting experiment; but would have been better pleased if the lady who wrote the communication had not withdrawn the permission to give her proper signature in full.

We have found the heat of the sun sufficient to kill the chrysalis in the cocoon; and as a single day of full exposure to hot sunshine is sufficient, it rarely happens that one such day does not offer, before it is time for the moths to come out. Whatever may be the mode used for killing the worm, it should be tried sufficiently early, or it will be but partially effectual.

For the prices of pea-nut, and other eggs, we refer our correspondent to the advertisement of T. S. Pleasants on several of the covers of late numbers of the Farmers' Register, and of G. B. Smith on the Journal of the Silk Society.—Ed.

ing winter was invariably a severe one. I thought that though a cause for this might be found in the luxuriant vegetation of last summer, there might yet be some truth in it—that nature, aware of the coming severity of the winter, might thus furnish the grain with an extra covering. At all events, the old gentleman's remarks set me to making additional observations. In confirmation of his opinion, I found that the snow-bird, (*fringilla Hudsonia*, of Wilson,) arrived uncommonly early this fall, and in great numbers. The redheaded woodpecker, which rarely leaves us altogether, except in the very depth of winter, has entirely disappeared. The blue bird is only to be seen in flocks, as if preparing to go farther south, while their sweet warble, in an ordinary winter may be heard every fine day. The gold-finch or thistle-bird, generally so abundant with us at all seasons, is only to be seen in small flocks, in and about the city. I have observed the nut hatch, *sitta carolinensis*, (this little insect-hunter and the downy woodpecker, are commonly, but most absurdly, called *sapsuckers*,) busily engaged hammering pieces of acorns, and beech nuts into crevices in the bark of trees, and after making them fast, carefully covering them over with moss, as if to secure a supply of provisions during the severity of the coming season. Even the crows, which generally winter with us in great numbers, seem, with an occasional exception, to have forsaken us. I am told that numerous flocks of quails have alighted in the city and still continue to do so—this has always been marked as a sign of the approach of severe weather. The mocking or Carolina wren, (*certhia Caroliniana* of Wil.) is always abundant with us. His lively, quaint and varied notes are to be heard, ringing through the woods, both summer and winter. I observed a large flock of small birds, finches, rise out of a garden yesterday, which were strangers to me. They sat so close and silent, until they at once rose and flew off, with a clear note like that of the gold-finch, that I could not determine what they were, and I am averse to killing the little beauties, unless when really needed. T. A.

**LAYING DOWN OPEN LANDS IN GRASS—KENTUCKY ROTATION—STOCK FODDER, MANURING AND GRAZING—CURING CLOVER HAY.**

From the Southern Cultivator.

(Near) Colbyville, Ky., Nov. 5th, 1840.

I shall now proceed to the laying down open lands in grass, and the length of time the grass is intended to occupy the ground will determine the kind of seed to be used. If it is intended for permanent pasture, blue grass should predominate. There should also be a considerable portion of timothy and clover seed. As soon as it is determined to put a field in grass, if in the fall the field should be sowed in wheat or rye, which should be ploughed in and afterwards harrowed, and, though not essential, it will be of service to have the land rolled. The next spring one bushel of clean timothy seed should be sowed upon every ten acres, one bushel of clover seed upon the same quantity of land, and half a bushel of blue grass seed upon each acre. This should be sowed in

March or early in April and I have put calves and sheep upon the rye or wheat and kept them upon it until the grass began to sprout, when every thing was taken off and no stock allowed to go on it again until after harvest. By the time the clover is going out the blue grass will be ready to take its place. I found considerable advantage from harrowing and rolling in the spring—the harrowing before sowing the grass seeds and the rolling immediately after. The harrowing would appear as if it would injure the rye or wheat, but such has not been the result. If the ground is put into grass with the expectation of breaking it up in two or three years, then the blue grass should be omitted, as it would not get sufficiently strong before breaking up to be of much service.

As an auxiliary in setting fields in grass, it is of great service to pasture small stock, calves or colts, upon the rye or wheat fields during the winter, and feed them with hay that has been permitted to ripen its seed. Some of the best seeded fields I have ever seen has been effected by feeding stock upon them without adding any other seed than those contained in the hay. In those cases care was taken to distribute the feeding over the field. And the hay used had a mixture of seed in it.

The usual rotation in out crops is two years in grass, two in corn, and one in wheat, rye or oats. Under this kind of treatment our lands are increasing in fertility; especially where the small grain has been fed down by hogs. I have one field that has been alternately in small grain, (fed off by hogs,) and corn; this field has also increased in fertility.

Whilst the fields are in grass, all the stock fodder (a name with us of the corn-stalks after the corn has been husked out of the shock,) is fed to stock upon the grass fields; this with the dropping of the cattle serves to enrich the field. As a general rule the stock should be fed upon grass lands that will some day be ploughed. In this way the manure in made and dropped where it will be wanted to nourish the succeeding crops.

About the first of March, (two weeks earlier with you,) the stock is taken off the grass fields, and put into pens of three or four acres for each kind of stock, and are fed in those pens until the grass gets a good start in the spring. The secret of having good grass consists in giving it a good start in the spring.

Sometimes there are points of ground where the soil has been worn off or washed away. In such cases it is best to haul out a few loads of manure and spread on those barren places, which will make it produce grass readily.

Where the points are stony they should be broken up small with a sledge hammer, and if too abundant, a part of them removed. Grass will grow well where the surface is covered with limestone provided the stone be sufficiently small.

I prefer putting grass upon wheat or rye but it will do very well put in with oats. When put in with oats, the smaller kind of oats should be used, or less seed than usual of the larger kinds. When the larger kinds of oats are sowed thick, they entirely smother the grass.

When the grass is intended to be cut for hay, timothy should be sowed either alone or with the sapling clover. They both ripen together, while the common red clover is ready to cut two weeks



sooner than timothy, and on that account not suitable to be mixed with it for hay.

Clover alone makes excellent hay, and is easily cured. After it has been cut a half day, if the weather is good, it should be turned over, and in two or three hours it will be ready to put up in shocks. The shocks are made five or six feet in diameter and six or seven feet high. The hay should stay in the shocks twenty-four or forty-eight hours; after which it should be exposed to the sun two or three hours, and it is then ready to be put into the barn or in stacks. In each stack of two tons there should be put a bushel of salt, scattered in whilst stacking. If clover is stacked out exposed to the weather the stacks should be covered with straw or timothy hay. The principal objection to clover hay is, the time of cutting interfering with the corn crop. It should be cut when about half the bloom has turned brown. In curing clover it should be turned gently, and should, throughout, be treated with tenderness, as rough treatment will make it part with many of its leaves and blossoms.

SAMUEL D. MARTIN.

#### THE SUPPOSED TRANSMUTATION OF WHEAT TO CHEAT.

"Agricola in the Alexandria Gazette, ridicules the position taken by Benj. Hallowell, a distinguished servant of Alexandria in a recent address before the Alexandria Lyceum, that "wheat will degenerate into cheat." He pronounces the idea an absurdity, unsupported by proof, an exploded doctrine, unphilosophical and unscientific; and among other authorities in support of his opinion, quotes the opinion of the late celebrated Mr. Wickham of this city, who with more wit than seriousness, said he "would not believe it if he was to see it."

"A little experience is worth all the speculative theories in the world. There is not a practical farmer in Virginia, being at the same time an observing one, who does not know beyond all possibility of being mistaken, that "wheat does degenerate into cheat." Let the shattered wheat around your stacks in the field come up voluntarily, and mature, and many times, particularly in bad wheat years, the heads will be cheat not wheat. It is not always the case, depending apparently upon the character of the seasons. So of the volunteer wheat permitted to spring up in stubble fields—if ungrazed and suffered to come to maturity, it will be cheat as often as wheat. We suspect that this fact is true chiefly or only of bad wheat climates, like ours of middle Virginia; here it is true beyond all question, notwithstanding the writers on botany may have assigned wheat to one genus (*triticum hybernium*) and cheat to another (*bromus secalinus*.) It may be presumptuous, but we are rather disposed to believe those writers in error, than to distrust the evidence of the senses of all practical observers.

"Agricola admits that all our thousand varieties of apples, from the gloria mundi or the Hesperian fruit, to the lowest crab, have come from the unscathed wild crab. Is there not as good ground to assume that the wheat and cheat are varieties of the same genus? In other words, may not

the botanists erroneously have classed them as distinct genera, or species of distinct genera?"—*Richmond Whig*.

The above article is the first reported excursion of the able editors of the Richmond Whig in the field of agricultural investigation and discussion; and we cannot congratulate them on the value of the honor and success acquired in the adventure. We should have passed by this article, and without comment, as we have done with almost every thing else on this subject for the last six years, (upon the ground that the subject had been sufficiently discussed before,) but for the broad assertion made by our brother editors above, that "there is not a practical farmer in Virginia, being at the same time an observant one, who does not know, beyond all possibility of being mistaken, that wheat does degenerate into cheat." Now, though declining again to argue here the question of transmutation, yet on this incidental issue, made upon knowledge and belief, we can assert, and prove also if necessary, that there are very many practical and observant farmers in Virginia, who not only do not "know that wheat does degenerate into cheat," but who fully believe the reverse; and who agree with the article in the Alexandria Gazette, that the idea is an absurdity, unsupported by proof, "and an unphilosophical and unscientific" though certainly not an "exploded doctrine." Though not deserving the reputation of being a good or judicious farmer, we may venture to claim the merit of having been a practical one, literally, and an observant one, for the more than twenty years of our practical agricultural labors; and that we not only still stand as an exception to the sweeping classification above of believers in transmutation, but have steadfastly maintained the contrary, and have proved it, as we conceive, so far as a negative proposition, where mistake is possible, is susceptible of proof. Long ago we (in conjunction with other farmers) subjected this question, in the most rigid manner that could be devised, to the test of actual and accurate experiment; the results of which were published in the first volume of this work, and which will be republished below. No exception has ever been taken by any person to the plan or the mode of conducting this experiment; nor do we conceive that it can be shown to be deceptive in any point, unless indeed by denial of the credibility of all the parties concerned, who signed the statement of facts and results.

In addition to the testimony afforded by this experiment, and all other facts and arguments which were formerly adduced in this journal, we offered (in this work) a reward of a full set of the Farmers' Register, to any person who would produce, and fully prove the pro-



duction of even so much as a single head of cheat from a grain of wheat. In the five or six years since this reward was offered, there has been no claim for it presented, (possibly because of the small value of the reward, or its want of notoriety,) and, moreover, though assertions of belief have been plenty, not one atom of *evidence* of transmutation has been brought forward, which ought to satisfy a scientific or legal tribunal. And we here repeat the offer of a reward, and increase it to the amount of \$100, which we offer for the first clearly and positively proved fact of the production of cheat from seed of wheat sown for that purpose, and of which the progress from the seed to the product shall be indisputably traced, and proved to the satisfaction of an intelligent scientific umpire. This offer we request the editors of the Whig to make known through their widely circulating journal; and if a claim for the reward should be made, we will leave the decision to judges, to whom there can be no proper ground of objection. If it is so very easy to cause the transmutation of wheat to cheat, as is averred and believed by most persons, and by so many modes and agents that it can scarcely be avoided altogether in the common practice of every seed time, then, surely an experimenter, aiming to produce that common result, by using any and all the agents deemed as efficient causes, might certainly and easily produce the now disputed result, and so clearly as to place the question beyond all future dispute. Until this is done, we shall remain unbelievers in the doctrine of transmutation of wheat to cheat, as well as (what is as firmly believed by some other persons) of wheat to spelt, (or darnel,) or to cockle, or of oats and flax to cheat. What would be thought of any doctrine of physical science affirming that a certain product would follow the use of certain easily available means, and yet, by no possible designed direction of the means, could the product be obtained! Therefore, to those persons who know of so many facts of foregone transmutations of wheat to cheat—who know of so many causes and agents which will certainly produce such effects, we say—"Let us pass by all remote and former operations and grounds for either asserting or denying the doctrine. Go to work now, and exhibit new facts and new proofs—or even but a single fact amounting to proof, and the question will be settled as you claim." If it were a matter to be settled by the respectability and credibility of *believers*, there would be no question better settled already. But that is not the ground to decide questions of science upon. We want facts, and not reference to authority, no matter how respectable. There has been no formerly prevailing absurdity of opinion

which the world has since shaken off, which in its day did not have the balance of authority of the most numerous and respectable believers in its favor. We do not question the sincerity of belief, the good faith, or the veracity of any one who asserts the doctrine of transmutation; but we distrust the strict accuracy of his reasoning, and the continuity of his chain of facts, from the first cause to the last effect. Therefore, without meaning the slightest disrespect to our brother editors of the Whig, or any other transmutationists, we must beg leave to say, in the words of Esop, "Do not tell us how far you jumped at Rhodes, but jump here, and let us see it."

To avoid frivolous as well as fraudulent claims for our offered reward, it is proper to impose some restrictions, and to establish some rule, by which an accurate mode of experimenting and truly reported results shall be secured. Therefore we require of any one who may design to claim the reward, and the honor of settling this long disputed question, that he shall give previous notice of his intended experiments, through the Farmers' Register, and that the plan of experiment, designed to be pursued, shall be also fully and particularly there and then set forth. The person shall, at the same time, name some one respectable, intelligent and distinguished farmer, and we will name another—and the two shall appoint a third person of competent ability to conduct the like experiment, and who shall endeavor to observe every condition and care required by the claimant, and which person shall decide upon the results without appeal. If, however, the conditions proposed for the experiment are manifestly insufficient, and such as could lead to no certain result, the chosen arbiter may object to them at first, and refuse to try, or decide by, an experiment so faulty as to lead to nothing but useless trouble. But by giving early notice, every proper and necessary condition can be adjusted, every objection removed, and the results made as certain as any can be in regard to vegetable reproduction. We invite the writer of the foregoing extract, (who is a farmer,) to achieve the labor he deems so light—and earn the reward and the honor of proving what he pronounces not only certain, but undisputed. In the mean time, we submit to his consideration the only experiment which we have yet known to be carried through for this object, and than which we cannot imagine one more favorable to the transmutation side, or a more strict test of the opposite opinion.

*"Experiment to test the possibility of wheat degenerating into cheat. [From vol. i., Farmer's Register, p. 83.]*

*"October 20th 1832. A spot about twenty feet square on one side of a field of corn, was left out when all the adjacent ground was ploughed and*

sown in wheat three days before. Soil, a silicious loam, (which had been marled in 1820,) on a retentive subsoil, which by preventing the sinking of the water from rains, keeps the surface very wet through winter and spring. The surface of this part of the field is a very gentle slope, declining towards the north, and the lowest spot of the whole (and therefore the most exposed to water) is where the space was marked for this experiment. There the surface becomes level. The whole field, including this spot, had been ploughed five or six inches deep last winter, for corn, and well cultivated, but not later than the beginning of July. All remained very clear of weeds.

"The space was slightly smoothed by the broad hoe, merely to level the clods, but not broken any where an inch deep, and generally not cut at all. As the corn had been tilled level, and not hilled, the surface required but little smoothing. Wheat was selected for the trial which had passed through a cockle sieve, and of course was all either shrivelled, or very small grains if plump. Lines were slightly traced along the edge of a straight rod, (not more than half an inch deep,) and a few seeds, varying from three to seven, were placed accurately at every six inches of the line, by notches on the rod made at those distances. The seed was carefully cleaned of every grain of cheat, spelt, and cockle. Half the square was thus planted in such rows six inches apart, and the remainder in similar rows twelve inches apart. For fear that even this very defective seed might not be bad enough to insure the change to cheat, one of the subscribers picked out a number of the most shrivelled and imperfect grains, all of which he is confident will bring cheat, if they are capable of producing any thing, which is very doubtful from their appearance. One of the rows was planted with these grains, four being carefully deposited at each distance of six inches. All the seeds were covered with about half an inch of mould taken by the hand from the intervals between the lines; and the whole space was then slightly beaten over with the flat of the broad hoe.

"About four feet width adjoining the square, and of similar unbroken corn land, was sown broadcast with similar defective seed, covered as shallow as possible.

"The earth dry at this time, and in fine order for ploughing. The weather uncommonly warm for the last three days.

"Present and assisting at the making of this experiment, and undersigned, Thomas Cocke and Edmund Ruffin of Prince George county, and William J. Cocke of Sussex—the first a believer and the second an unbeliever in the change of wheat to cheat, and the third undecided. It was our design in this experiment to bring into operation every cause to which this change is usually ascribed by different persons, namely, 1. imperfect seed—2. thick sowing—3. a wet soil—4. hard or unbroken soil—5. grazing or mowing, which is to be done next spring.

"If any cheat or spelt, should grow in this square from any other seed, it cannot be mistaken for the product of the wheat we have planted, unless the plants should stand in one or more of the positions so accurately fixed by measured distances.

THOMAS COCKE.  
EDMUND RUFFIN.  
WILLIAM J. COCKE.

"October 20th, 1832.

"April 15th, 1833. The growth of plants on the square is very mean, (generally six or seven inches in height,) and but few are living compared to the number of grains sown. Every row however has some plants living. Half the marked row where the worst seed was used, and as much of the one adjoining was cut down this day within an inch of the ground, and the parts so treated were also marked.

"June 3d. We again carefully examined the experiment together, to know and report the final result. Not a single head of cheat or spelt is in the whole space. The cut plants have grown as tall, and are not perceptibly worse than the balance in the same rows. The row sown with the very imperfect grains, has a still more scanty growth than the others, but had twenty-four heads of wheat in its whole length; a few of these heads had not come out of the boot and perhaps will not produce grain—but they were opened and found to be wheat, like all the rest which were out.

"The adjacent parts of the field of wheat contain a few scattering stalks of cheat, and still fewer of spelt. The seed had been well cleaned, (though probably not perfectly,) by the hand-sieve.

THOMAS COCKE.  
EDMUND RUFFIN.\*

"Prince George Co., June 4, 1833."

#### RHUBARB PLANT.

From the Cultivator.

This excellent perennial, (called, in New England, the "Apple-pie Plant," from the fact that pies made of it, so much resemble those made from the Apple,) not only makes a very superior and grateful pie, but is said by medical men to make a very healthful one. A plan for its culture which we have seen adopted with very good success, is this:—In the spring, before the leaves put out, place your roots in a light soil, well manured. When the leaves are well grown, take common barrels, and after removing the heads, place them over the plants. As the leaves spread, the sides of the barrel will support them, and you will soon see them rising above the top. By adopting this plan, leaves will grow much faster, and are more delicate, making better pies and more of them. This plant may be forced in the winter season with but little trouble, and thus made to supply a family with excellent pies, not inferior to those made of the apple, all the year. In order to effect this, the roots should be taken from the garden in autumn, and placed in water-tight kegs, or large pots; some fine garden loam should then be put in, and water poured upon it, that it may settle well among and around the roots, which should be placed level with each other, a little below the surface of the earth. The whole should then be covered with other pots of the same size, to exclude the light, and well supplied with water. The heat of the kitchen, or, towards spring, of a tight warm cellar, will afford a sufficiently high temperature. Plants of one year old will answer to force in this manner. The stock of the leaf must be peeled, cut into small pieces, and prepared for pies in the same manner as apples.

\* Dr. William I. Cocke was absent, and therefore did not sign.—Ed.

## THE MAMMOTH CAVE.

From the Journal of Commerce.

This vast subterranean territory is situated in Edmonson county, Kentucky, in 37 degrees north latitude. The cave extends under the great range of knobs which border what have usually been called the Green River Barrens, and is near to Green river, and on its southerly side. The Barrens were formerly destitute of timber, but covered with high grass, which was every year destroyed by fire. Since this section of Kentucky has become thickly settled, the fires have been prevented, and now the land is becoming thickly covered with a growth of hickory, oak, and chestnut timber. The knobs are a range of hills which extend a great distance on the southerly side of Green river, and bound its waters on the south. This region of country is a limestone formation. Many of the streams of water run under ground for great distances.

The Mammoth Cave is of vast extent, and equal in size (reckoning all its branches and apartments) to the whole Island of New York. The main cave is, as far as explored, thirteen miles in length, with numerous branches making off in every direction. The entrance to the cave is through a passage in the rock at the bottom of a hill and at the foot of a knob; and is about six feet in width and ten feet in height for about thirty yards; after this it increases in height and width. During winter a strong current of air rushes into the cave—in summer the current changes, and blows equally strong out of the cave. The roof and sides are of solid limestone; the bottom is covered with earth to the depth of several feet, and beneath this earth is solid rock. The earth on the bottom of the cave is strongly impregnated with the nitrate of lime; and during the last war, and for several years previous, large quantities of saltpetre were manufactured at this cave. A large portion of carbonated alkali was required to be used in crystallizing the nitre, which increased the expense of the process to such an extent that it cannot now be made to compete with the saltpetre imported from the East Indies, which is now sold in our markets at a very low price. The supply of nitrate of lime in the Mammoth Cave is inexhaustible. The earth in the cave, after having been lixiviated, becomes re-impregnated with the nitrate again, equally strong as at first, in about three years. The process of making saltpetre was by leeching or lixiviating the earth in hoppers, in the same manner as ashes are leached to make soap or potash; then evaporating the liquid to a certain consistency, and mixing it with carbonated alkali and allowing it to crystallize. Hoppers were constructed in the cave about one mile from its mouth, to which water was conveyed in wooden pipes from the outside, and the liquor obtained from the hoppers was conveyed to the mouth of the cave by the same means, where it was raised by pumps into the evaporating pans. About fifty men were employed during the war, in the Mammoth Cave, in collecting and lixiviating the earth, together with oxen to draw the earth to the hoppers. During the whole time these men were employed in the cave, there was not a case of sickness among them. The atmosphere of the cave is dry, and of uniform temperature through-

out the year, viz. 60 degrees of Fahrenheit. Animal and vegetable substances placed in the cave would become dry, but never putrefy, or decompose. It is considered one of the most healthy places known; and the valetudinarian could resort to this cave for the recovery of health, with greater prospect of relief, than to any other climate whatever. On this point there can be no doubt; and medical or scientific men can philosophically account for this, from this fact, that the atmosphere is dry, and of uniform temperature throughout the year. The air of the cave is pure, respiration is easy, combustion goes on well, lights burn bright and clear. Animal and vegetable substances decompose and putrefy from the effects of heat and moisture combined. In the cave these are both absent. Besides this, the climate of this section of Kentucky is delightful; and immediately around the cave, the country is picturesque and beautiful, and a residence there for a valetudinarian would afford medicine to the mind as well as the body. The road in the cave for the first mile is as good as any of our country roads. Many persons may suppose this great subterranean apartment is gloomy—not so. It is of too vast extent. Its mighty walls and vast apartments afford a sublime spectacle, and impress the mind with wonder and admiration. This is the work of the great Architect of nature, and no person can traverse this vast subterranean territory, without feelings of veneration and awe. Here the sound of the mighty peals of the rolling thunder never reach. All is still—quiet and peaceful. Mr. Gorin, of Glasgow, Ky., wrote me in 1839 that he had erected a hotel at the mouth of the cave for the accommodation of visitors. He was at that time proprietor of the Mammoth Cave tract, consisting of about 1600 acres, which he improved as a grazing farm. Since then, I have been informed that the cave has been purchased by Dr. Croghan, of Louisville, and that he intends constructing a hotel in the cave. I presume that the spot he will select for building is the foot of the mountain, as it is called, about a mile from the mouth. Here the roof and walls are of great height, and the cave of great breadth. This cave is visited by vast numbers of persons—it is about eight miles distant from the great road leading from Lexington to Nashville, and is about an equal distance from Lexington, Louisville and Nashville, viz. about 100 miles. To persons entering the cave at the time it was worked for saltpetre, the first glimpse which the visitors caught of the group of blacks working by torch-light, at a distance ahead, and of their white shining teeth, was very imposing, and can be better imagined than described. Mr. Miller, who resided at the cave a number of years and had charge of the saltpetre works, assured me that he had never seen any animal or reptile in the cave. I have been much at the cave, having resided there for weeks together, and my knowledge of it is derived from personal observation. Mr. Gorin, in his letter to me of last year, states that a large apartment had been recently discovered in a distant part of the cave, in the form of a semi-circle, about five hundred feet in height and the same in width, and that in another apartment they had discovered a stream of water of considerable extent; and added, that the whole extent of the cave, so far explored, was from 50 to 100 miles. The reader

may wonder why such a subterranean territory has not long ago been completely explored. The reason is, that visitors have their curiosity satisfied without accomplishing so great a labor. It would require a great length of time to examine or travel its whole extent. The cave has been once inhabited. The workmen, in digging up the earth for saltpetre, found the remains of cane torches in great abundance, and frequently old moccasins. In a room called the deserted chamber, which is an apartment elevated some feet above the main cave, are the imprints of human footsteps in the sand, not more than four inches in length. And near seven miles in the main cave from its mouth are the evidences of that part of the cave having been inhabited by great numbers of persons. About a mile and a half from the mouth of the cave a branch makes off to the right from the main cave;—this is what is called the haunted room, named from the echo which answers sound made in that apartment. In this room are a great abundance of stalactites, hanging from the roof like icicles from the eaves of a house. They are of every variety of shape which the imagination can picture. One of these stalactites is of very large size, and hollow; and when struck, sounds so loud that it can be heard a considerable distance. This is called the Bell. Another is in the shape of an armed chair.

This chair was called "Wilkins's Chair," named after the worthy Chas. Wilkins, of Lexington, brother of our former minister to Russia, who was at that time one of the proprietors of the cave. This arm chair is nearly as large as one of the columns of the Exchange, and about ten feet in height. It is solid and ponderous, and of that species of rock called fluor spar. It has been formed by the action of water from above the surface, penetrating the rock and carrying with it its minute particles, which, as the water separated, left the particles to adhere together, and by the action of the air to harden and become solid rock. Thus it is that many of the strata of our earth are formed. The decomposing of one body affords materials for the composing of another. Had this water, holding this mineral or earthy matter in solution, penetrated wood, it would have filled its pores, and changed it into stone, retaining its original form, and becoming what is usually called a petrification. This room, containing such abundance of stalactites, is about a half of a mile in length, and about twenty rods in width;—and my opinion is that the land on the earth's surface above this apartment is level, which allows the surface water to settle down through the rock. Where the land above is rolling, the rain water runs immediately off; hence the dryness of the rooms underneath the sideling knobs. The walls of this room, which are of solid limestone, are covered with a white incrustation, similar in appearance to the coating of the inside of a tea-kettle in which hard water has been boiled for a length of time;—and on some places the incrustation is chequered with black lines, adding to its beauty and appearance. At the side of this room the traveller descends a sand hill about sixty-feet, at the bottom of which is a passage on the left (about four feet in width, fifteen in height, and about fifty in length,) to another room or apartment running parallel with the last. This passage is a great curiosity—exhibiting columns of

beautiful shape, on one side, and caves or indentations on the opposite side, of a corresponding shape and size. To the first view the rock appears to have been separated by some convulsion of nature. But such was not the case: the top of the passage is arched with the same solid rock, which would render it impossible that such a cause should have produced this effect. It is nature that has arranged these corresponding columns and curves according to the laws of affinity, attraction, crystallization, &c. &c. The room we are now in is called the "pond room," from the circumstance of there being on its surface a small pond or basin of water, of a few feet in circumference, and about three feet in depth. This water is of crystal clearness, the smallest object thrown into it may be distinctly seen on its bottom. Although this basin is three feet deep, it has the appearance of being not more than two inches in depth, and a gentleman who had the curiosity to attempt to jump across it, did not quite reach the opposite side, and found himself half his depth in water. Thus it seems that a man cannot always trust his own eyes, and although persons may sometimes be very positive in regard to matters and things, still, like this gentleman, who undertook to jump across the pond, may unfortunately find themselves positively mistaken. The water in this pond was what I term *pure water*—holding nothing at all in solution. Every earthy particle had been precipitated by time and temperature, and the stillness of the atmosphere favors such an operation. What may be the properties of the surface which surround this body of water to refract the rays of light from our lamps, so as to make the water appear of less depth than its true depth, I cannot determine.

Near to the basin of water in the pond room, is a pile of round stone, about the size of paving stone, quite black, and covered with an incrustation of a semi-vitrified substance, which renders the appearance much like a pile of cinders. Visitors have named this place "Vulcan's workshop." In one part of this room, a body of water falls in a solid column, from a circular hole in the roof, about the size of the head of a barrel, and perfectly round, into a well in the bottom of the cave of about the same shape, but of larger size and of great depth.

The main cave, in those places where it is intercepted by other rooms or branches, is generally of great height and increased width. The traveller, in passing up the main cave, frequently meets with rooms and branches which are inaccessible, from the fact that entrance to them is several feet above his head, and can only be reached by means of a ladder. There are also vast numbers of apartments running in various directions underneath, and the sound of the footsteps denote where these apartments are. Great numbers of these branches and apartments have never been visited. The cave may truly be said to be a perfect wilderness to explore. About 11 miles from the mouth, the walls and roof of the main cave are very high, and covered with incrustations of the purest white and deepest black, chequered in every variety and interspersed with beautiful crystallizations of every size. Some of the incrustations have a shining frosted appearance, while others are without any such ornament, presenting a pleasing, beautiful, and harmonious contrast. When the

rays of light from the lamps strike these surfaces the walls and roof present the most brilliant, beautiful, grand and sublime appearance imaginable. The shining sides of millions of the beautiful crystals, reflecting, and re-reflecting the light, and their little points like distant stars in the firmament, twinkling and shining as if trying to outdo each other, present to the view of the astonished and enraptured beholder the rich beauties of the harmonies of nature in all their grandeur and magnificence. Here, in a vast hall, in one of nature's mighty subterranean mansions, eleven miles from the light of day, in soft and solemn silence, stands the astonished beholder wrapt in admiration,—in wonder, in astonishment. On every side, he beholds nature in all her magnificence, beauty, harmony and order; every movement of the lamps presents to his view new reflecting surfaces, that seem as if alive, welcoming and enjoying as with enraptured ecstasies the rare visit of the rays of terrestrial light. Where is the human being who could stand unmoved in such a place? Impossible! Admiration, contemplation, meditation, and adoration will fill his soul, and he will, as it were, involuntarily and spontaneously offer up to the adorable and almighty Creator of the heavens, the homage of adoration and the tribute of praise.

Here, every crystal has its own peculiar shape; nature knows no variation in the laws of crystallization; every variety preserves its own peculiar order and form. To the learned geologist, my description will not be deemed fanciful; he can easily picture to himself the effect of the rays of terrestrial, moving light, thrown upon the surface of crystallized walls, in a dark apartment of great height and extent. What a place this for contemplation and meditation;—the stillness, the silence of midnight, yes, and ten times more—the stillness of silence—yet surrounded by ten thousand times ten thousand living lights, changing with every breath that moves the hand which holds the lamp, the rays of the light of which are thus newly reflected. Here respiration is easy—the lamps burn bright—here man may enjoy life, even in a subterranean dwelling. Doct. Smith, of New Jersey, who visited this portion of the cave in 1811, thus speaks of its appearance. "Imagine to yourself a superb hall brilliantly illuminated with ten thousand times ten thousand lamps, with its superb walls irradiated with millions of the richest diamonds, and you will have but a faint idea of its lustre."

The walls of the cave are generally of an even surface. A description of the numerous rooms, apartments, and branches, would swell this article to a great length. I have traversed various portions of the cave a great number of times, and at every time found something new and interesting. Some apartments of the cave contain Glauber and Epsom salts in great abundance. These salts are in a crude state, and have been collected and used in that section of the country.

The examination of the cave has developed this fact, viz.: that the temperature is the same at five hundred feet, as it is at two thousand feet below the surface. The members of the Royal Academy of Sciences at Paris have been some years experimenting upon the heat of the interior of the earth, by boring into it to a great distance below its surface, and have expressed the opinion

that the heat increases as they progress downwards. In this cave such is not the case, but on the contrary, the temperature is equal and uniform.

With respect to water, although the cave is in many places deep, still it is in nearly all its apartments perfectly dry, that is, in all apartments which are protected from surface water produced by rain. The temperature of the cave is so low that no moisture is produced by evaporation. As there are numerous apartments beneath the main cave, these of course would preserve the upper apartments dry, unless the heat of the earth increased in further progressing downwards, in which case evaporation would produce dampness in the upper apartments, as a necessary consequence. The quantity of water which falls upon the surface of the earth in that latitude averages about forty inches per annum.

The atmosphere of the cave is another subject of great importance, being uniform throughout the year, and perfectly dry, or rather comparatively so,—and whatever moisture there may be, is attracted by the dry earth which covers its floor, by which it is absorbed and crystallized. Many of the readers of this article may not be aware that where two crops of sand are placed side and side, the one wet, and the other perfectly dry, the dry sand will attract moisture from the wet, until both become equal.

Meat left in the cave twelve hours will become so completely impregnated with nitre that it cannot be eaten—and meat that is slightly tainted, if placed in the cave will be divested of its putrefying properties, and gradually dry and become hard. I have no doubt that in process of time, this cave will be resorted to for the restoration of health. A person could, without any inconvenience, travel in the cave five or six hours every day for a sufficient length of time to allow the atmosphere to have a powerful effect upon the animal frame.

The circumstance that there has never at any time been a single case of sickness among the great number of persons who, for several years, wrought at this cave, is most conclusive on this point.

The Mammoth Cave has been, at some very remote period, inhabited. Mr. Miller, the former superintendent of the workmen at the cave, found, in the excavated earth in the cave, a human jaw bone of very large size, which would go entirely outside of the jaw bone of most living persons. This jaw bone was kept at the cave several years to show visitors, and is still, probably, somewhere in existence, as it was in a good state of preservation.

The cave is visited by several hundred persons annually and the showing of its rooms has now become a source of revenue, the superintendent requiring \$1 from each visitor as compensation for furnishing a guide to show the cave. Formerly, in traversing the cave a great distance, it was requisite for the traveller to mark each corner which he passed, with the figure of an arrow, pointing outward. A full account of this cave would fill a volume. M.

#### LARGE HOGS.

From the Kentucky Farmer.

November 26, 1840.

Sold by Dr. S. D. Martin to H. Savary, merchant, at Colbyville, Clarke county, Ky., five hogs

of the Woburn breed, of the following weights. Seven and a half pounds deducted from each one for weight of the breeching.

No. 1 weighed	640 lbs.
No. 2       "	630   "
No. 3       "	660   "
No. 4       "	748   "
No. 5       "	824   "

The following gentlemen were present when the hogs were weighed.

Rev. Wm. Gunn, Edmund Taylor, and Henry Savary.

Two of the above hogs had been used as boars, and were three years old in March last. The other two were two years old in February and April last. SAM'L. D. MARTIN.

#### AMERICA AGAINST ENGLAND IN COTTON MANUFACTURING.

From the Journal of Commerce.

The Monthly Chronicle, published at Boston, contains an article prepared by Mr. Montgomery, an Englishman practically acquainted with the cotton manufactures of England and the United States. In connexion with the remarks of the editor of the Chronicle, who also is learned in such matters, the article presents a minute statement of the comparative expense of manufacturing in both countries, and proves that we have the advantage and can make cotton goods 4 per cent. cheaper than they can be made in England. These statistics are of great value; for they dissipate the false opinion which has been inculcated so industriously, that labor is vastly cheaper in England than here, and that she, by means of the abject poverty of her operatives, has the ability to overwhelm and destroy our manufacturers, unless they are saved by high duties. There has been a great deal written, and facts have been abundantly stated, proving the truth; yet some men high in honor have not yet left off talking about the degradation which Americans must suffer if left to contend unprotected against the "pauper labor" of Europe. The fact is, that American manufacturers are able to pay the wages which have been so much complained of, and so enable our laborers to maintain their own respectability and that of their families, and yet sell their fabrics all over the world cheaper than the English. In the supply of our own market with plain cotton goods the advantage in favor of the American manufacturer stands about thus:—

Greater cheapness in prime cost of the goods,	4 per cent.
Difference of interest, freight and other charges of importation,	9
	—
	13
Duty according to compromise,	20
	—
	33

It is proved by these facts, that neither the success of our manufacturers, nor the honor of our laboring population, nor the furtherance of a home market for the products of agriculture, require an increase of duty for the purposes of protection. The American manufacturer, as the matter will stand two years hence, will be protect-

ed by an advantage over Englishmen of 33 per cent. In other words, the goods which cost the American manufacturer ten cents a yard, the American consumer must pay him 13 cents for, before the ascending scale of profits will be checked by foreign competition. In our judgment, the agricultural interests of the country would show little of the sagacity for which the Yankees are famed, if they should be led to make farther sacrifices in favor of manufacturers. The spinning of cotton is a business as firmly established in our country as the grinding of wheat, and no more needs protection. In truth it has a much broader field of enterprise, and is less encumbered by competition. The manufacturing interest of our country in all its branches has great reason to be satisfied with its present position. Manufacturing was never so healthy under the American system as it has been since that system was overthrown. At no period in our history have the prospects of our manufacturers been so good as they are at this moment. The mushroom growth of establishments has in a great measure ceased. Men who know nothing of manufacturing have learned to abstain from it. The same prudential principles have been found applicable to this as to all other branches of business. It has been learned that, as in other avocations, so in manufacturing, a man must understand his business and manage it himself. There is nothing which our manufacturers have to fear so much, as an abandonment of these sound maxims, and a return to political gambling for manufacturing prosperity. We are glad to know that in all this we speak the sentiments of the more intelligent portion of our manufacturers. There is no danger that those who are now engaged in manufacturing, will not find domestic competition springing up fast enough around them, without the stimulants of a high tariff. Nor is there any danger that the home market for the products of agriculture, will not be enlarged as fast as the best interests of the country require. The business of spinning cotton, though recently depressed, has not at any moment within the last three years been carried on in well regulated establishments at a very great loss. And now such establishments are making good profits on all the goods they can turn out, and are unable to keep pace with the demand. In the coming five years there will be a great increase of cotton factories in this country. This business will enlarge itself more, in all probability, than any other; and the enlargement will be created by the stimulant of high profits. Since, then, the manufacturers have been placed in the very best possible position, we trust they will be too sagacious to abandon it.

We annex same extracts from the Chronicle article, taken from the Boston Daily Advertiser.

#### *The Cotton Manufacture of the United States compared with that of Great Britain.*

The last number of the Monthly Chronicle contains an analysis of an important work lately published at Glasgow; by "James Montgomery, superintendent of the York Factory, at Saco, Maine." The author is an Englishman, and is well acquainted with the state of the cotton manufacture in Great Britain, by many years' practical acquaintance with the business, and he has also become acquainted with the state of the

manufacture in this country by four years' experience and observation, under the most favorable circumstances. His work is, therefore, full of facts of great interest, and which it is important for the manufacturers of this country to know. The article in the *Monthly Chronicle*, to which we refer, gives an analysis of the more important facts, with tables abridged from the work, giving the comparative prices of each description of machinery, and each branch of labor. It is too long for publication in a newspaper, but we here give the general recapitulation of the estimates there presented, showing the cost and produce of an American and an English cotton mill of the description there given, with the general remarks of the *Chronicle*, which we recommend to the attention of those who are interested in this subject.

### Recapitulation.

#### EXPENSES OF OUTFIT.

	In America.	Gr. Brit.
Cost of buildings, &c. -	\$44,000	\$11,904 00
Machinery in preparation department, -	21,662	14,401 60
Do in spinning do -	23,554	8,920 32
Do in weaving do -	14,620	8,227 20
Total -	\$103,836	\$43,453 12

#### EXPENSES PER FORTNIGHT.

Preparation department -	\$250 50	\$87 36
Spinning do -	224 00	124 16
Weaving do -	734 95	477 70
General charges -	161 00	101 76
Miscellaneous charges -	584 00	332 64
Total -	\$1,954 45	\$1,123 62

#### PRODUCE PER FORTNIGHT.

Throstle warp spinning, spindles, [Am. 18's; Br. 16's yarn,] -	2,880	2,160
Speed -	4,700	4,400
Pounds produced -	10,080	6,345
Hanks do. -	181,440	101,520
Do per spindle -	63	47
Woft, No. 18, spindles [Am. throstle; Br. mule,] -	2,112	2,400
Speed -	4,700	4,200
Pounds produced -	7,744	5,660
Hanks do -	139,392	102,000
Do per spindle -	66	42½
Pieces* of cloth woven from 128 looms, -	1,710	1,408
Yards woven -	51,300	35,200
Speed of looms per minute -	120	95
Effective shots obtained -	104	77½

From the foregoing estimates, is deduced the comparative cost of manufacture in the two countries. The expenses of a fortnight's operation in the American Mill, \$1954 45, divided by the number of yards produced, gives the cost of a yard 3 4-5 cts. The expense of the British mill for the same period \$1133 62 cts., divided by 35,200 yards, gives a cost of 3 1-5 cents per yard. The difference of cost 3-5 of a cent is equal to an excess of 19 per cent. in the cost of the American manufacture over the British, the former, though

narrower, being the heaviest cloth, and containing the most threads.

To this is added an estimate of the comparative cost of the raw material to the British and American manufacturer. The charges to the British manufacturer, on the import of cotton from an American southern port, for shipment, freight, insurance, importer's profit, duty and inland carriage, are estimated at 27 1-2 per cent., which supposing the cost of the cotton at the place of shipment to be 7d. or 14 cents, and supposing 2-5 of a pound of cotton to be required for a yard of cloth, makes the original cost of cotton 5 1-2 cents, and the cost in England 7 cents for each yard of cloth. The charges to the American manufacturer, are estimated at 11 per cent. on the cost of cotton at the exporting market, or 6 1 5 cts. at the mill for the quantity required for a yard of cloth. The American manufacturer, therefore, has the advantage of 4-5 of a cent per yard in the cost of the raw material, while the English manufacturer, has the advantage of 3 5 of a cent in the cost of manufacture; making the advantage in the aggregate in favor of the American manufacture 1-5 of a cent. per yard, or 1-35 or 3 per cent. nearly in the whole cost.

From other modes of calculation, it will be apparent that in the cost of cotton, the American manufacturer has the advantage of about half a cent a pound in the freight from the place of production, as much more in being free from import duty, and probably another half cent in the difference of other charges. This makes a great difference in his favor.

In reference to the comparative expense of the cotton manufacturers, in Great Britain and this country, the author remarks as follows:

"That the general rate of wages is higher in the United States than in Britain is admitted, particularly the wages of females employed in the factories. The greater part of these are farmers' daughters, who go into the factories only for a short time, until they make a little money, and then 'clear out,' as it is called: so that there is a continual changing amongst them, and in all the places I have visited, they are generally scarce; on that account the manufacturers are under the necessity of paying high wages, as an inducement for girls to prefer working in the factories to house-work; and while this state of things continues, it is not to be expected that wages in this country will be so low as in Great Britain; and although they have undergone a considerable reduction during the late depression still they are higher than in any part of Britain."

"Throstle spinning is nearly as cheap in this country as in Britain, in consequence of the higher speed at which the spinning frames are driven and the greater quantity of work produced in a given time. But the price of carding is fully double that paid in Britain, because here, men are generally employed to attend the cards, spreading, scutching machines, &c., while the same work is done by boys and girls in Britain. The lowest wages paid to any girl in the card room, that I am aware of, is one dollar per week and her board; and taking her board at the lowest rate, viz: one dollar and twenty cents per week, her wages in all will amount to two dollars twenty cents, equal to 10s. sterling per week. The average rate of wages for girls in the card room, may

\* The American pieces of 2,400 threads, a three-leaved twel, 18's warp, 30 inches broad, 30 yards long, weighing 10 lbs.; the British, a shirting 2,000 threads, 16's warp, 18's weft, 35 inches broad, 25 yards long, weighed 8½ lbs.



vary from 11s. to 12s. 6d. per week. Men's wages may vary from 13s. to 18s. per week. Thus in every department, the rate of wages is generally higher in the United States than in Britain: nor do I think that they will, at least for many years, be so low in this country as in Great Britain.

"The price of living here is higher, and the hours of labor longer, besides the greater part of the factory workers being connected with farming, whenever wages become reduced so low, as to cease to operate as an inducement to prefer factory labor above any other to which they can turn their attention, then a great many factories will have to shut up. During a stagnation of trade, it is common for the manufacturers here to stop a part, or the whole of their factories, and then the workers retire to their farms; such was the case in 1837, when a vast number of factories were entirely shut up. Yet it seemed not to affect the workers very materially; indeed, many of the girls who had been some time in a factory, seemed to rejoice and regard it as a time of recreation; so that the manufacturing population of America are an entirely different class, and placed in very different circumstances from those of Great Britain, and very great changes must take place before the wages in the former can be so low as in the latter country; and, indeed, the manufacturers here can afford to pay higher wages than the British, because they run their factories longer hours, and drive their machinery, at a higher speed, from which they produce a much greater quantity of work, at the same time they can purchase their cotton at least one penny a pound cheaper, and their water power does not cost above one-fourth of the same in Great Britain. But though wages cannot be reduced much lower than they are at present, there are other means by which manufacturers might abridge their expenditure. Their establishments might be erected at much less expense—a more improved arrangement might be adopted—and the work conducted with much more economy. All these, however, are matters which the Americans will very speedily learn; every successive depression of trade will lead them more and more to see the necessity of managing every department of the business with the least possible expense; and as soon as they can equal the British in this, they will be able to compete with them, and that successfully too, in any market whatever.

"The British have, no doubt, attained to great perfection in the art of manufacturing cotton goods; but whether they will be able to maintain that high pre-eminence to which they have arrived, or have to yield to the increasing improvements of foreign nations, are questions difficult of solution. Their most powerful rivals are, doubtless, the Americans. The manufacturers of no other country can purchase their cotton so cheap, and it is presumed no country possesses so extensive water privileges; only a small portion of which have as yet been occupied. If we add to these the intelligence and enterprising spirit of the people, it will at once be obvious to every unprejudiced mind, that the American manufacturers are the most formidable competitors with which the British have to contend in foreign neutral markets."

It will be observed that the foregoing estimate embraces no computation of the cost of working

power or of the comparative expense of steam and water power. The estimate of 7 1-2 per cent. for the wear and tear of machinery and buildings also, if intended to embrace, besides wear, the interest on capital, seems to be inadequate, and perhaps hardly more than sufficient to cover the charge of wear and repairs, in which case a further allowance of 6 per cent. in this country, and 5 in England, should be made for interest.

We can hardly imagine, however, that there is not some error in the estimate of the comparative cost of buildings in the two countries. The sum of \$4,608, appears to be a very small sum for the cost of a building of the dimensions described, and we can hardly suppose it to be adequate to the erection of such a building in a style of strength and durability, bearing any comparison with buildings used for the same purpose in this country; since the difference of cost stated is evidently much greater than can be accounted for from the greater cheapness of labor and machinery in Great Britain.

The cost of water wheels and gearing, and also of a steam engine, is given in the estimate above quoted, but no estimate is made of the cost of water power, or of coals for producing steam. These are important items, and the question of their comparative cost is one of considerable interest. We regret that it is overlooked in this work.

Among the miscellaneous articles at the close of the book, are calculations of the cost of water power as it is sold by the proprietors of the locks and canals at Lowell, Massachusetts, and also at Manayunk, Philadelphia. At Lowell, a mill power sufficient to carry 3,584 throstle spindles, with the accompanying machinery, computed to be equal to 54 1-2 horse powers, together with four acres of land, is sold at the rate of \$4 a spindle, amounting to \$14,336. Deducting \$3,436 for the value of the land, it leaves \$10,900 for the cost of the water power, or \$200 per horse power, the interest of which at 6 per cent. is \$12 per annum. At Manayunk, water power has been sold at a much higher rate, viz. at a rate computed to be equal to \$1,016 per horse power or a rent of \$60 96 per annum. The first of these statements may be considered as affording a just criterion of the cost of water power in this country in an eligible position for extensive manufacturing operations.

Among the same miscellanies we find an estimate of the costs of steam power in a mill in Massachusetts, where an engine of 40 horse power carries 3,700 mule and throstle spindles with the accompanying machinery. This estimate is for cost for coal and attendance, \$12 20 a day; which is equal to \$3,782 per annum, and to \$94 55 per horse power. This is exclusive of oil, packing, &c., which would swell the estimate to \$100 per annum for each horse power. The only information given in the book relative to the cost of steam power in Great Britain, is the remark appended to the above statement, that the estimate there given is about double the cost of the same power in Glasgow. At this rate the cost of the steam in Glasgow is equal to four times the cost of that in Lowell.

In the testimony of Mr. Kempton, given on an examination by a committee of the house of com-



mons, as quoted in a pamphlet on the factory question, by Rev. R. H. Gregg, published in London, in 1837, the cost of steam power in England is stated to be £12 10s., (or \$60) per horse power. If this be a correct statement, and if we offset the cost and repairs of the engine against the cost and maintenance of the water wheel, we have the cost of steam power in England, equal to five times that of water power, at one of the principal manufacturing towns in this country. This difference however in the cost of power is reduced to the proportion of about two to one, if the author's estimate be correct, of the greater amount of power required in the American mills in consequence of the exclusive use of the throstle spindle. The cost of power thus estimated, which should be added to the author's computation of the cost of manufacture of a yard of cloth, is equal to 1-14 of a cent in the American mill and 1-6 in the British mill; the difference of power being about 1-11 of a cent in the cost of each yard of cloth. If the machinery in the American mill were of the same kind as that in the English mill, the difference in the cost of power would be about 1-8 of a cent. This difference, although it seems insignificant in the cost of a single yard of cloth, is an item of some importance in the expenses of a year, and amounts to about 1 per cent. on the whole cost of manufacture, including that of the raw material. If the author's estimate of the difference in the cost of manufacture be correct, the addition of this advantage swells that difference to 4 per cent.

It will be observed that these computations apply only to those branches of the cotton manufacture, to which the advantages of mechanical power can be applied with the greatest effect, and which the experience of our countrymen has enabled them to prosecute most successfully, and not at all to the finer and more complicated manufactures, which require the application of a greater amount of manual labor, and of skill which is the result of continued experience. Yet this result presents a most encouraging view of the prospects of this important manufacture in this country. It shows that in the manufacture of those descriptions of cloth for which there is much the greatest demand, the mills of this country are at this moment able to sustain a competition with the most favorably situated establishments of Great Britain, and to supply the articles produced at equal prices in markets foreign to both countries. But this is not all. The whole comparison shows that those items in the computation which produce a result in our favor, are of a permanent character, secured to us by our national position, and of which we cannot be deprived; while a portion of those, in which we labor under a disadvantage, will change in process of time, and render the general result of the comparison still more favorable to us. This remark will apply particularly to deficiencies in economical management, deficiencies in certain portions of the machinery and the want of equal experience and skill in a portion of the hands employed.

These considerations must relieve those who are interested in the American cotton manufacture, from any serious apprehensions of permanent decline of this branch of industry in this country. An ample pledge for the continuance of a demand for the products of this manufacture, is

to be found in the universal want of the civilized world, of a material which can be in no other way so cheaply supplied. If this material could be furnished by foreign laborers on better terms than by our own, the American manufacturer might well feel, that he held his command over the market, even of his own country, by an uncertain tenure. But if it be proved that the advantages of his position are such, that notwithstanding the materially higher cost of labor in this country than in Europe, he can still furnish his products at a price at which he cannot be underbid, even in a foreign market, by the manufacturers of any other country, his position is as safe and independent, as in the nature of things the emoluments of any occupation can be.

#### ANSWERS TO GENERAL QUERIES\* ON MARLING, IN REGARD TO GREEN-SAND MARL USED ON THE PAMUNKEY RIVER LANDS.

(Continued from p. 689, vol. 8.)

V. *Answers of Edmund F. Wickham in regard to the use of marl, on his South Wales farm, Hanover county.*

*Answers to 1st. Query.*—I commenced the use of marl in 1824.

2d.—It was my property, and in a general way under the management of an overseer then and now. He follows my directions with sufficient exactness.

3d.—In 1824 there were about 545 acres of cleared land, exclusive of some open land in the forest.

4th.—I have cleared about 40 acres since, of land somewhat similar, but inferior to the rest of the farm, making in all 585 acres, between the public road and the river. To this part of the farm my marl and manure have been exclusively applied. I do not include a clearing of about 225 acres of forest land, which is used for a standing pasture, &c., and which will not be embraced in my answers.

5th.—In the early part of my operations my progress in marling was slow. For the last ten years I have been thoroughly satisfied of the great importance of this work, and my overseer knows that I am well pleased to hear he is actively engaged with all the force he can spare in hauling marl. I have marled to this time not less than 425 acres. This winter I am engaged in marling a second time the land which I first marled in 1824.

6th.—The marl I use is taken from the pits of my brother William F. Wickham. He estimates the quantity of carbonate of lime at 45 per centum. My South Wales farm is situated on the South Anna river just at the junction of the North and South Anna rivers, [which form the Pamunkey.] I have repeatedly dug and bored for marl on my land, without finding it. At several points on the river side where the plant you term the "marl indicator" is found growing with great luxuriance in the water, which oozes out of the bank, I have sunk deep pits, and made diligent search, hoping to discover

\* The queries are repeated on page 24 of this No.

- marl, but without finding it. From my want of success, I am led to believe the marl indicator does not always point out with absolute certainty the presence of marl, as one would infer from a communication in your *Farmers' Register* vol. 6, page 454. As far as I am informed, marl has not been found in a single instance on the South Anna river, above its junction with the North Anna.
- 7th. and 8th.—There is some green-sand in the marl I use, but what proportion I cannot say. There are no hard masses of marl to diminish its value.\*
- 9th.—My constant aim is to apply about 600 bushels of marl to the acre.
- 10th.—I have never knowingly used less than 500 bushels.
- 11th.—I have made no trial of any much heavier dressings. I believe the carbonate of lime is the chief fertilizing principle contained in the marl, and I endeavor to apply to each acre, as near as I can, 300 bushels of lime. Had I not so great a distance to haul the marl, I would apply more than 600 bushels of marl to the acre.
- 12th.—Previous to my use of marl, the farm was cultivated on the three-field system, corn, wheat and pasture.
- 13th.—The same system was pursued until 1826, when I commenced with the four-field rotation, wheat, corn, wheat, and one year in clover, which I still continue, and am very partial to it. My farm has improved rapidly under this course. I believe it yields greater fertility to the land, and more profit to the owner, than any other system. If your clover is not grazed, but turned under for the wheat, all the materials afforded by the crops converted into manure, and due diligence used to get out marl, which is one of the main, if not the chief pillar in the system, I feel confident the land will improve rapidly, and your fields be kept clear of blue grass, which is often so prejudicial to wheat, after a clover lay of two years' standing. At present this rotation appears to have lost some favor with Mr. Selden of Westover, and Mr. Carter of Shirley; but I anticipate their return to it, with additional encomiums, before many years elapse.
- 14th.—On the crops next following, when no manure was mixed with the marl, which was sometimes the case, when I first commenced the use of it, the benefit was not so great. Its effect on the clover which succeeded was very apparent. It acts more immediately on stiff than on light land.
- 15th.—The earliest effects of the marl have increased and continue to increase.
- 16th.—I do not apprehend any diminution from the increased product of my marled land. I esteem it a most valuable and lasting manure.
- 17th.—My land has sustained no damage by applying marl too heavily.
- 18th.—I find the manure from my farm-pen and stable yard, when mixed with marl, decidedly more efficacious on the first crop, and feel confident it is rendered more permanent. Wherever manure is put out, marl should be spread with it, and both ploughed in together. Gypsum acts well on clover.
- 19th.—I should suppose the average productive power of my land in corn before marling was from three to three and a half barrels per acre.
- 20th.—The present average is from six to seven barrels per acre.
- 21st.—My crops of wheat have varied with the season. They have increased at least in the same proportion with the corn crop.
- 22d.—I estimate the increased product of my land, from the use of marl and other manures, at an average of near 100 per centum. The chief advantage has resulted from the marl, as it enabled me to extend my improvement the more rapidly, and by the increase of my crops has furnished more materials to enlarge the amount of putrescent manures.
- 23d.—My observation does not contradict any of the important theoretical opinions advanced in your *Essay on Calcareous Manures*;\* but, on the contrary, my experience every year convinces me more and more of the great importance of the views brought forward in that valuable work. The benefits already derived from it have been great, and as yet they are but in their infancy. I am firmly convinced your *Essay* is destined to work a vast improvement throughout the whole marl region of the United States, and, if the farmers will zealously work on the principles there laid down, it will be the means of converting an arid and sterile country into one abounding in every thing that can delight, and reward the toils of the husbandman. You have cause to congratulate yourself on the great aid you have rendered to the agricultural community.

December 15th, 1840.

ON THE SOILS, AND MARLING IMPROVEMENTS  
OF KING WILLIAM COUNTY. INTRODUCTORY  
TO ANSWERS TO THE GENERAL QUERIES  
ON MARLING.

By the Editor.

The county of King William is the lower part of the peninsula formed by the Pamunkey and Mattaponi rivers. The soils of the county may be classed in four general divisions, viz.: 1. the Pamunkey low lands (described at page 679 of vol. viii.); 2. the Mattaponi low lands, which are still more sandy than the former, and of inferior quality; 3. the level high land draining towards the Pamunkey, which is most generally very stiff, and 4. those draining into the Mattaponi, which are as remarkable for extreme sandiness. The line of separation between these two last divisions is not precisely the ridge, or summit level, which separates the water flowing in opposite directions to the two rivers, but is nearly so. In my

\* From three principal diggings of Mr. W. F. Wickham, which are those also used by Mr. Edmund F. Wickham, specimens deemed of average strength were carefully selected, and reported at p. 684 of vol. 8. The proportion of carbonate of lime ascertained accurately, and also the green-sand as merely fixed by the eye, were as follows:

	No. 1	No. 2	No. 3
Carbonate of lime in 100 grains	32.50	44	36
Green-sand	22	8	5

recent hasty visit to the county, my personal observations were almost confined to the first and third of the above divisions, not having seen any of the Mattapony low-grounds, and very little of the sandy high or "forest land," that being the common designation in this and the neighboring counties for the high and naturally poor lands back from the rivers, and which name has no relation to the existence of trees on the land. Hence the term "forest land" before used in the fourth of the queries on marling, would here be misconstrued, unless explained to mean *wood-land*, as it was designed, and as it will now be changed for.

The high or "forest" land, or "ridge" land, as I have elsewhere termed such, whether of the stiff or light class, was originally poor, as such soils are every where else in the tide-water region of Virginia. Before I had seen any of this stiff kind, it was so described to me by Mr. Fontaine, (in reference to his own farm,) that I recognized it at once as the same kind which forms a small part of the Coggin's farm, which I formerly occupied, and nearly the whole of the Maycox farm adjoining, and much other land in that neighborhood. The peculiar marks of this very base soil were described at page 40 of the 'Essay on Calcareous Manures,' as the subject of several marling experiments; and on referring to the description copied below, Mr. Fontaine declared the perfect resemblance, and adopted the description for his own general soil, with the slight exceptions which he states in his answer.

The description given of that portion of my own land was as follows; and so far as I saw of the high level stiff land of King William, my own observation, as well as the better authority and testimony of a resident cultivator, declared the resemblance to be very close:

"The soil is very stiff, close, and intractable under cultivation—seems to contain scarcely any sand—but in fact, about one-half of it is composed of silicious sand, which is so fine, when separated, as to feel like flour. Only a small proportion of the sand is coarser than this state of impalpable powder. Aluminous earth of a dirty fawn color forms nearly all of its remaining ingredients. Before being cleared, the soil is not an inch deep, and all below for some feet is apparently composed of the like parts of clay and fine sand. This is decidedly the most worthless kind of soil, in its natural state, that our district furnishes. It is better for wheat than for corn, though its product is contemptible in every thing. It is difficult to be made wet, or dry—and therefore suffers more than other soils from both dry and wet seasons, but especially from the former. It is almost always either too wet or too dry for ploughing—and sometimes it will pass through both states, in two or three clear and warm days. If broken up early in winter, the soil, instead of being pulverized by frost, like most clay lands, runs together again by freezing and thawing—and by March, will have a sleek (though not a very even) crust upon the surface, quite too hard to plant on before a second ploughing. The natural growth is principally white and red oaks, a smaller proportion of pine, and whortleberry bushes throughout."

In addition to the ordinary acid character which I have elsewhere attributed to this kind of land, in common with all other of our naturally poor soils,

and which acid is of vegetable formation, I have long believed this very peculiar kind of soil (as known under my own cultivation) to contain also a portion of *sulphuric acid*, either free, or in combination with iron or alumine. The reasons are stated at pages 50, 51, of the work above quoted from. If this supposition is correct, it serves to explain several strange and otherwise inexplicable circumstances, viz.: the remarkable sterility before marling—the non-effect of gypsum not only *before* marling, (as on all other acid soils,) but also *after* marling, contrary to the result on most other soils—and the remarkable and great growth of the first clover *after* marling, as if receiving the greatest possible benefits of gypsum. And in fact so it is, if my supposition of the previous presence of sulphuric acid is correct; for, by union with the lime of the marl, that acid, or its compounds, would be necessarily converted to gypsum, and in such quantity that any additional dressing of gypsum given at the same or an early time, being superfluous, could have no additional effect. Mr. Fontaine has 200 acres of wood-land of this kind marled before clearing. The soil seemed already deepened and improved (from almost nothing) by this mere top-dressing of two years old; and if permitted so to remain for 10 years before killing the trees for cultivation, I have no doubt that the delay, as well as the marling, will be well paid for in the greater than ordinary improvement from such an application. The earlier and particular effects of marl on this soil may be seen in the answers to the general queries which will follow.\*

One of the earliest successful and noted experiments with marl was made in King William, by Mr. Richard Hill. Whether his trial was earlier or later than my first, (in 1818,) I could not learn positively; but it was somewhere about the same time.† I heard the first intimation of it some time after my own practice was in successful progress, and since, from time to time, by loose and uncertain rumor. The first account heard was of remarkable improvement from the marling; next, after some years, that the land was "ruined" by the marl, and was good for nothing. It seems that the first benefits had not induced a regular continuation in the practice, either by Mr. Hill or any of his countymen; and this disastrous result discouraged further efforts, until after the lapse of some 10 or more years, and the establishment of a better understanding of the cause of injury. Dr. William Westmore began and made great and profitable improvements by marling on the adjacent field of similar very sandy soil. The effects of this part of the operations of this now deceased successful marler and estimable man, I visited, as well as the subject of Mr. Hill's earlier experiment, adjoining. The latter is on the Rumford Academy tract, and adjoining the public road. The present occupant, Mr. Christian, was from home, and I could get no particular information of the treatment of the land after it had been "ruined by

\* The Pampatike land, the subject of Mr. Carter's answers which will follow, was generally of this stiff and otherwise bad character. The crop of corn on it seemed to my eye as much as seven barrels to the acre.

† Mr. Fontaine, on further inquiry, heard, and informed me by letter, that it was in 1816.

marl," until of late years. But whether it was otherwise manured (of which, however, I could not bear any thing from neighboring gentlemen) or not, it is certain that the whole piece (10 or more acres) is now in a very productive state, though said to have been, for the last 7 or 8 years, under a perpetual succession of corn and oats, and without manure at least during that time. It had been in corn this year; but as the whole crop, stalks included, had been removed, I could not judge as to the product. Mr. Fontaine had heard that an acre which had been marked off, and the product measured at the time of gathering, made rather more than nine barrels (45 bushels) of corn. These accounts are, however, all very uncertain—and I would not record them, but for the fear that the facts may become still more uncertain by lapse of time. If this loose, and doubtless incorrect statement, should meet the eye of any one better informed, I hope he will furnish any necessary corrections, so as to preserve the interesting facts of this one of the largest and earliest experiments of marling in Virginia. Mr. Richard Hill has long removed from his former residence, and I know not his present home, but care shall be used to place this article in his hands, after its publication.\*

Marl is supplied most bountifully to this county, so that numerous landholders own beds, and none are far removed from some of good quality. It was stated in the report of Pamunkey marl (page 679, vol. 8.) that all of that locality was green-sand marl—and of the *eoene* kind, or more ancient deposit. On the contrary, all of the high-lands (or "forest" as here distinguished) is simply calcareous marl, and such as I have been most conversant with in Prince George. That is, if it contains any green-sand, or other fertilizing ingredient other than the shelly matter, it is in too small proportion for its *separate* or additional effect to be appreciated—and more than I even suspected to exist, until very recently.

Most of these marls are of the dingy light color which I have elsewhere called yellow, and which I find that some call red. There is also blue marl, of good quality, but which some persons are afraid to use, because supposing it may be injurious. This erroneous opinion is founded on the fact that some spots of land have been manifestly and greatly injured in product by a bluish clay, or "blue fuller" as here called, and which, from the slight examination which I gave to two kinds only, and the report of effects found elsewhere, I doubt not is entirely destitute of calcareous matter, and is also impregnated with sulphates, or alum, both of which are poisonous to soil and plants; and sometimes the presence of uncombined sulphur is manifest to the sense of smelling. But as calcareous matter decomposes both these sulphates, and with the acid element forms a new manure, gypsum, (plaster of Paris,) their continued existence is impossible in contact with shelly matter. Therefore, if shelly or calcareous matter is present, the existence of any injurious ingredient need not be feared; and even the acid and poisonous principles of the "blue fuller," will be converted to a manure, if applied with or after marl; though the cost would probably

exceed the benefit thus to be derived from the clay.

As in most other places, the people of this county have been slow in availing themselves of the great advantages offered by their marl beds. Still, every body who possesses marl has used it to some extent, and some to great extent. The great error, as usual elsewhere, with all but a few, is that they do not employ a regular force at marling, throughout the year, but only work at it when the teams and hands can be spared from the regular farming operations. Such transient and irregular labors are always performed at great disadvantage, even if the farmer's overseer will permit any "leisure time" to be found for the purpose. If, on the contrary, but one horse were kept regularly hauling marl from the pit to the field, where marl is as convenient as in many parts of King William county, the first year's manuring with that small force alone would amount to more than all that is done by a large farm force in the usual irregular manner, and at uncertain times. And neither would the regular employment of the small force preclude the using the irregular and large—but would make it twice as useful, by making every thing ready for the employment whenever a leisure time occurred. Capt. Drury, an energetic and good farmer, had but recently discovered marl on his land; and at the short leisure time of the remainder of the same season, he marled as much as 70 acres for his next year's cultivation. This was a great and praise-worthy effort, and he has been well rewarded for it, in the evident increased product and fertility of the land. But still, as he admitted to me, the injury to his teams by this effort, and the mode of the unusual employment, was greater than would have paid for the performance of the same amount of hauling, by regular and steady work continued throughout the year.

Nov. 10th, 1840.

#### Postscript.

The long delay of publication of the above remarks (which were written early in November,) has enabled me to accompany them by an answer from Mr. Richard Hill, whose present residence I was afterwards enabled to learn, and therefore to address to him a letter of inquiry concerning his very interesting, because very early, experiment of marling, in the case referred to above. It will be seen, according to his statement, that my information, gathered lately on the place, and in the neighborhood, was, as supposed, far from being accurate. Nevertheless, I leave my foregoing remarks precisely as at first written, subject to this later, as well as to any other future correction. It should be observed that Mr. Hill sold his land in 1822, since when he knows nothing of it except from loose report. But however great may be the uncertainty in regard to various minor points of Mr. Hill's marling, there is none as to the one main point, that is to say, the continued and increased beneficial effects of an application made as far back as 25 years ago. Though his letter was not written in reference to the general queries, and indeed does not bear on but a part of them, yet, being upon the oldest practice, it will be placed here as first in order of the few reports of answers obtained in regard to the marling of King William county.

\* The information desired from Mr. Hill was obtained sooner than was expected, and will here follow this introductory article.

QUERIES (REPEATED FROM PAGE 489) TO ASCERTAIN THE ACTION AND EFFECTS OF SHELL MARL AS MANURE, IN GENERAL, AND ANSWERS AS TO THE (ORIGINALLY POOR) HIGHLANDS OF KING WILLIAM COUNTY.

1. When was the use of marl as manure commenced on your farm?
2. Whose property was the farm, and under whose direction was its general management; (if not your own,) then, and since?
3. What was the quantity of cleared land on the farm then ready for and subjected in its turn to cultivation of any kind, exclusive of all waste ground?
4. What is the quantity since added, by new clearings of wood-land, or other waste spots brought into tillage? And, generally, was the land thus added richer or poorer than the present average quality of the farm?
5. What was the rate of progress in extending the marling—and, altogether, how many acres have been now marled?
6. What was the usual strength of the marl used, or its proportion per cent. of carbonate of lime, or pure shelly matter?
7. Was there any peculiar quality or ingredient, besides the carbonate of lime, that served to give additional value to the manure—as “green sand,” or gypsum, or a large proportion of fine clay, &c.?
8. Or was there any thing that served more than usually to lessen the value, as stony hardness of many shells, or of masses of marl, &c.?
9. What have been the usual quantities of marl applied to the acre?
10. Have there been made trials of any *much lighter dressings* of marl than the usual quantities—and if so, what were the results, compared to the usual quantities?
11. Have there been made trials of any *much heavier dressings* than the usual quantities—and with what comparative results?
12. Was the cropping and general management of the land, *for a few years immediately previous to its being marled*, such as might be considered *meliorating* or *improving*, (or at least as *preserving* its degree of fertility,) or was it *impoverishing*, and wasting of fertility in general? State the rotation of crops, if known.
13. The same question as to the few years immediately after marling, and since.
14. What have been the usual and general results of the applications of marl, on the increase of the crop next following, on land in different conditions—and afterwards to the present time?
15. Have the earliest fertilizing effects of marl (or the increased product of the first crop, or first course of crops in the rotation,) been subsequently increased or diminished by lapse of time—and in either case, under, and in proportion to, what circumstances?
16. Is it your opinion, whether founded on experience or observation, that the early increased product of your marled land (say for the first three or four crops, or of any number you have yet made thereon,) will be subsequently diminished, under any rotation of crops, or course of cultivation, that would not have been decidedly exhausting and injurious to the land, if marl had not been applied?
17. Has sterility, or other damage, been caused on any part of the land, by applying marl too heavily, or in any other manner—and under what circumstances of soil, tillage, &c.?
18. Has it been found that any other manures, either vegetable and putrescent, or mineral, are more efficacious, or durable, on poor natural soils *after* marling them?
19. What do you suppose was the average productive power, in corn, per acre, of all your now arable and cultivated land, before marling?
20. What do you suppose is the present average productive power of the same in corn?
21. What was the usual or average quantity of the crops of wheat made annually on the farm before marling, and recently?
22. Taking such general grounds for the estimate as may be satisfactory to your own judgment, state what you suppose to be the annual value of the present *general* or *average gross product* of grain, or other marketable products of the fields in cultivation, of the land marled, caused by, and owing to marling—per acre, and also in total amount annually from the whole farm?
23. Does your experience or observation serve to contradict any of the important theoretical opinions in regard to the action of marl, or statements of actual results in practice, as presented in the “recapitulation” embraced in pages 53 to 56 of ‘*Essay on Calcareous Manures*’—and if so contradicting, in what particulars?

1. *Answers of Richard Hill, in regard to the Rumford Academy farm.*

*Ashfield, near Richmond, }*  
*Nov. 27, 1840. }*

I received a few days past your letter of the 17th instant, and take the earliest moment to answer it. I fear that I shall not be able to give you the satisfaction you expect, on account of the great length of time that has elapsed since I left Rumford Academy, (18 years,) and not having committed to paper any thing relating to the experiments made by me in marling, besides being en-

tirely out of the habit of writing, except on matters of business. In the year 1811 I purchased of Mr. Jno. Roane, sen., Rumford Academy, with about 300 acres of land attached thereto; all of which, except about 20 acres just around the buildings, lay on the west side of the main road as you go up the country, known for a great number of years back as the Burnt Ordinary field, and proverbial in all that time for its *extreme poverty*. In 1814, I commenced building a mill, and, in digging out the foundation, in a few feet of the surface struck upon a bed of marl, of which I thought but little, being more intent on the mill at that time than the im-

provement of land so very poor as to be beyond all hope of recovery. Nevertheless, having some corn growing not far from the mill, I carried a wheelbarrow full of marl, fresh from the pit, to be strewed between two corn-rows about the space of 25 yards, and the same quantity of marl between two more rows, and across the first, the same distance. This was done about the last of May or first of June, and the corn cultivated just as all the rest in the field. The marl produced not the least effect, for good or for evil. In the spring of 1815 I sowed the field in oats, and when the oats in the field generally were ankle high, the cross mark where the marl was put was knee high—the former being of a pale sickly color, the latter *deep green*; and might be seen at the distance of 300 yards. With this trifling experiment I was roused at once. There was no room for doubt, two facts were immediately established, viz., the great value of marl as a manure, &c., the certainty that it would not act on poor naked land until it was acted on by a winter's frost.\* The land that this experiment was made on was very poor, light and sandy, but had not been grazed for several years. In the autumn of 1815 I commenced carrying out marl on the field for the next year's crop of corn, and in the beginning made a series of experiments. It was strewed on six rows about 400 yards long,  $5\frac{1}{2}$  feet apart, at the rate of 250 bushels to the acre. On six more adjoining at the rate of 300 bushels to the acre—on six at 400—six at 500, and so on up to 1000 bushels to the acre. The land very poor, acid, and much stiffer than that on which the first experiment was made. The rows on which the 250 and 300 bushels were put, produced the best corn, and all as high as 600 yielded double the quantity that it would have done without the marl; from 600 and upwards, the crop was less and less, and the 1000 bushels' rows brought none. The rest of the field was finished out at the rate of about 300 and 350 bushels to the acre. The whole field was put in wheat the succeeding autumn, and produced four times as much as it did in 1812—no disaster of any kind happening to either crop. The rows that received most benefit in the corn crop had the same effect on the wheat. The 1000 bushels rows had no wheat, and the year following had no grass, but was as naked as a wheat-treading yard. I continued to carry out the marl from year to year until the arable land was all dressed with it at the rate of about 250 to 350 bushels to the acre with the same beneficial effects as above described—no grazing allowed, and not a particle of manure of any kind except the marl on the land on the west side of the main road. On a piece of land that was the last of my experiments, after the marl, a crop of corn was taken off and the land seeded in wheat at the usual time, at the rate of three gallons to the acre, and rolled after seeding, and again rolled in March fol-

lowing. On this land I say I gathered 22 bushels of wheat for onesown; but I attribute the great yield as much to the roller as to the marl. The land was very poor, light and sandy, and during the growth of the wheat crop scarcely a spire of grass was to be seen in it. The year that this last mentioned crop of corn was made was remarkable for the great destruction by the cut-worm amongst the young corn. Mr. Jno. Roane cultivated a field in corn the same year, separated from mine only by the main road. His crop was so annoyed by the cut-worm that he told me he replanted it five times. In mine there was not one cut-worm to be seen. The spot you make inquiry about, on the right side of the road as you approach the house, I think was marled in 1815 or 1816 with about 400 bushels to the acre, but had been lightly manured previously and heavily cropped with corn, wheat or oats, and sometimes in Irish potatoes. That spot was much the stiffest land on the whole tract. There were two kinds of marl, each a mixture of a large portion of shells of every kind I ever saw, with brown earth of a chocolate color. The earth in one was stiff and adhesive, the other light and sandy. The light and sandy I used but little, and that on stiff land; the other kind was used on all the light and sandy land, and on the greater part of the stiff. I found them equally efficacious, though I did not remain at the Academy long enough to determine whether or not the sandy marl would be as lasting in its effects as the clayey, of which I had my doubts. The land on which I applied the marl had, as I suppose, been cleared some 80 or 100 years, and abused as all the Virginia lands had been in the olden time. Judging from the growth on the uncleared land adjacent to the cleared, the stiffer parts I should think were very poor, cold, acid land, that would not produce more than 10 or 12 bushels of corn when first cleared. The lighter parts of the farm would have produced I imagine double that quantity, the land being much more lively. At the time I took possession at Rumford Academy, that part of the land on the west side of the public road, which constituted the whole of the arable land except, as I said above, about 20 acres round about the houses, would have yielded not more than five or six bushels of corn to the acre, and less wheat. At the time I sold the place (1822) the same land would have yielded fifteen bushels of corn, and as many bushels of wheat\*—no other manure except the marl having been applied to it during my residence, and that only once, and at the rate per acre as abovementioned. In the year 1822 I sold the place to Mr. William Ruffin. What he did in the way of marling I know not. He afterwards sold it to Doctor Wm. B. Westmore, who succeeded astonishingly, as I have been told, in the improvement of the land by a second application of marl, and clover. Whether or not he used other manure with the marl I know not, but it is certain, from what I have been told by others, that the plantation was more improved when he left it,

\* The latter inference was altogether mistaken. It was not the action of frost, but proper mixture of the marl with the soil which was wanting. If marl is first applied to land but the hour before planting corn thereon, and well mixed with all the ploughed depth, very great and most manifest effect will be seen by the time the plants are four inches high—perhaps as early and as great effect as even a very rich putrescent manuring could produce in so short a time.—Ed.

\* From a previous estimate made by Mr. Hill of product of wheat, it may be inferred that he here means fifteen bushels for one of seed, and not to the acre. As the usual mode of sowing seems to have been remarkably thin, fifteen for one might have been not more than 7 or 8 to the acre.—Ed.

[compared to its original state,] than any one in the county of King William. I should have mentioned that the spot on which I put 1000 bushels to the acre, by proper treatment now yields as well as any part of the farm. I have been told by farmers of the strictest veracity that at the time Dr. Westmore sold the place, it yielded double the quantity of corn and small grain that it did when I left it. He had followed up the improvement by sowing clover and by the use of leaves taken from the woods &c. &c.

I omitted to mention that the quantity of shell or lime in the marl was not ascertained during my experiments by analyzing it. According to my observation there were only two ingredients—earth and shell; no green-sand, no gypsum, no stony hardness of shell.

RICHARD HILL.

## II. *Answers by William S. Fontaine, in regard to Fontainebleau farm, in King William county.*

- 1st.—In 1820, about ten acres were marled by a former proprietor; began myself in 1835.
- 2d.—I purchased of different individuals, two of whom previously had bought many small lots, most of them from William and Mary College, varying in quantity from 20 to 300 acres—the whole tract making at present 1300 acres. Under my personal direction since 1835.
- 3d.—About 400 acres had been cleared in many small detached pieces surrounded by pines.
- 4th.—200 acres since added by clearing—poorer than the previous average quality.
- 5th.—About 150 acres a year have been marled, some years a great deal more, and some less; 750 acres in all marled, including 200 acres still in woods.
- 6th.—The strength of the marl supposed to be about 60 per cent of calcareous matter. I have marled 4 acres with a blue marl, about 30 per cent.\*
- 7th. and 8th.—No other ingredient (or any kind) unless "of fine clay" in the marl, which however has been but little used, and seems to be more suited to the light sandy land, than the yellow marl, which was the kind generally used.
- 9th.—The quantity applied the first year, 350 bushels per acre; since, 450 bushels on the clay, and 200 on the sandy land.
- 10th.—On some *light* and *very sandy* slopes, as little as 120 bushels have been used, with greater benefit than when much larger quantities were applied, the latter burning up the corn after the first rotation. Latterly, on such places I have hauled out the clay from the top of the banks, after mixing it with the marl; the improvement is more visible than when the marl and clay are used on different lands. As little as 200 bushels of marl have been applied on the clay

\* Specimens of these, which were carefully selected by the reporter, aided by the direction of Mr. Fontaine, and afterwards analyzed, showed the yellowish marl, which is like the great body, to contain 57 per cent. of carbonate of lime, and the blue (which lies under the other) to contain 58 per cent.; so that the two may be considered as nearly equal as possible.—E. R.

lands. I do not know that any difference, between the effects of that and the heavier dressings of 450 bushels was observable, except that clover did not take so well on the former, and it is more difficult to scatter equally over the land the lighter, than the heavier dressing.

- 11th.—In 1835 I hauled out 2500 heaped bushels marl on 2 acres of rather sandy land, then in young pines; in 1836 planted in corn; estimated product 12 bushels to the acre. 1837 in wheat; very indifferent crop. 1838 in corn—marl-burnt—did not gather an ear. In the fall turned it under with a four-horse-plough, top dressed with manure, sowed in lucerne, 6 lbs. to acre, choked with weeds, particularly mullein, which was pulled up by hand; the few springs of lucerne left, very luxuriant. In 1841 will be in corn, when its recovery will be tested. To the eye this land is greatly improved.
- 12th.—The former cultivation was impoverishing, the two-shift rotation—1st, corn, 2d, wheat or oats, and grazed. No manure had been hauled out, except on a portion of that bought of Mr. Y. J. Clements.
- 13th.—The cultivation, since marling, meliorating—three-shift, corn, wheat, clover not grazed, with litter from the woods, and all the manure applied that could be raised.
- 14th.—On the poor level clay land, which formed the great body of the farm, and which is precisely similar to that described in page 40 of 'Essay on Calcareous Manures,' (except that the subsoil at the depth of six inches is a reddish yellow, and more clayey, besides standing wet weather better,) the improvement on the corn crop is slight indeed, scarcely perceptible the first year, unless where manure is used, then the increase is great, upwards of 50 per cent. Without the marl, the manure does but little good, and soon disappears. Clover will not grow at all on any of my land before marling—afterwards the crop is truly surprising on the clay lands. On the lighter lands I find the increase in the crop the first year, from marl alone, much greater than on the clay, fully 40 per cent. greater, or 50 to 60 in all, supposing the first benefit to the stiffest land to be only 10 to 20 per cent. There is a gradual and constant increase every year if the rotation is at all ameliorating, whilst the unmarled land, under the same treatment, continues at a stand. Clover does not grow on the sandy land well, unless plastered—it is otherwise on the clay.
- 15th.—The early effects of the marlings always increased subsequently.
- 16th.—My experience thus far is, that the early increased product of marled land is not subsequently diminished, but the contrary—the land marled by Wesley in 1820 will now produce 40 bushels per acre. This has had the benefit also of having been manured once, and of clover. Similar and adjoining land before marling did not produce more than six bushels.
- 17th.—On several sandy knolls injury has resulted from too much marl being applied, but easily recovered by manure or pine leaves.
- 18th.—Manure is much more efficacious after marling the land. Gypsum does not act at all before marling. It does afterwards on the sandy land. I am not certain as to the clay.
- 19th.—The average product in corn, before marl-

- ing, was about 8 bushels per acre.  
 20th.—Now it is 20 bushels to the acre.  
 21st.—The former average crop of wheat was 300 bushels—from 700 to 800 since marling.  
 22d.—The average value of annual increased product in grain, I think equal to \$7 per acre—and \$1700 from corn and wheat, not estimating hay, clover, cattle, &c.  
 23d.—It does not serve to contradict, but, on the other hand, to confirm the statements of the "recapitulation" in the 'Essay on Calcareous Manures.'

### III. Answers by Thomas Robinson in regard to Mount Pisgah farm, on Mattaponi river.

*Answer to 1st query.*—The use of marl was commenced by myself, in 1834.

2d.—The property was my own, and under my personal direction ever since.

3d.—Quantity of cleared land then 200 acres.

4th.—Added since 20 acres, poorer by one-half than the general average of the whole farm.

5th.—The rate of marling from 20 to 50 acres per annum. 210 acres are now marled.

6th.—The marl supposed to be [of its similarity] about the strength of Capt. Fontaine's.\*

7th and 8th.—No other ingredient known, as beneficial or otherwise, except a large proportion of fine light yellow clay.

9th.—About 200 bushels put to the acre.

10th.—I have marled as light as 150 bushels per acre, and found it more improving, after the first crop, than heavier marling. Heavy marling answers well the first crop, but is sure to fire, more and more every succeeding crop.

11th.—In 1817, on a very poor and sandy knoll, my father, Col. Beverley Robinson, hauled out from 1500 to 2000 bushels of marl to the acre. Fifteen acres were marled at this or probably a heavier rate. No manure has been applied to this land since. Nor has it made a crop of corn within my recollection—the crops being burnt up every time when in cultivation. The present year probably a barrel [5 bushels] to the acre has been gathered. Yet, to the eye, this land seems to be greatly improved, being darker and stiffer than the adjoining land more recently and lightly marled by myself, though before marling, from many indications, the first marled piece appears to have been more sandy than the adjoining land. The product of this piece of land in small grain is unknown to me, not having sown any on it since in my possession till this fall.

12th.—The previous cultivation was the three-shift rotation with close grazing. Impoverishing, of course.

13th.—The cultivation since has been on the three-shift rotation, but no grazing permitted.

14th.—The increase was supposed to be 25 per cent. the first year, and as much more annually to the present time.

15th.—The early effects have been increased.

16th.—I consider improvement made by marl permanent, and not to be diminished under any rotation of crops or course of cultivation.

\* Which was found by analysis to contain 57 per cent. of carbonate of lime.

E. R.

17th.—On very light sandy soil, a reduction of product equal to one half has resulted from very heavy applications of marl.

18th.—I believe vegetable manures more durable after marling; but whether more efficacious at first I am unable to say.

19th.—The average product before marling was about five bushels of corn to the acre.

20th.—The present productive power equal to 20 bushels of corn.

21st.—About 100 bushels of wheat was the yearly crop previously. Now 50 bushels of wheat, and an increase of 100 per cent. upon the product of rye and oats, they being my principal small grain crops.

22d.—The increased value is about \$8.50 per acre, in the increase from marling; and \$700 in the annual value of the gross product caused by marling.

### IV. Answers of Thomas Carter, in regard to Pampatike farm, King William county.

*Answer to 1st query.*—I commenced the use of marl in 1827.

2d.—Pampatike has always been my property, and was under my immediate management till 1836; since then I have continued to direct what crops should be put in, what land manured, &c., though I do not now reside there.

3d.—When I began to marl there were about 800 acres cleared.

4th.—I have since added nearly 400 acres, by purchase and clearing—independent of 150 acres of swamp land, which I reclaimed and cultivated two or three years, but have since been obliged to abandon. The land I have added was poorer than the average.

5th.—The number of acres marled per annum has been irregular. I have now marled upwards of 800 acres.

6th.—I have never analyzed the marl, and cannot tell its proportions. It is considered very rich.

7th.—I do not think there is any green-sand in my marl; nor do I believe it contains any gypsum. I have not used the green-sand with the marl; but I find it very advantageous mixed with other manure. There is no green-sand at Pampatike, and I procure what I use from Mr. Bassett's plantation. I decidedly prefer the marl.\*

8th.—We sometimes find large masses of shells; but this is not very often. I do not think it makes much difference when put on the land with fine marl.

9th.—On all the land marled previous to 1839, I put from 500 to 600 bushels; since then about 300 bushels have been used per acre.

10th.—We have never put less than 300 bushels per acre. My overseer thinks it answers quite as well as 600 bushels.

11th.—I have never made trials of heavier dressings than above stated.

\* The marl spoken of by Mr. Carter is merely *calcareous*. That which he calls "green-sand," obtained from Mr. Bassett's land, we infer is the green-sand marl used from the same place by Dr. Corbin Braxton and described at page 687, of vol. 8. Mr. Carter's preference (after trial and comparison) of the merely calcareous marl is a fact well worthy of note.—ED.



12th.—The three-field system was used before I commenced marling, corn, wheat, pasture. Some few lots I manured very highly; they produced fine clover with the aid of plaster, but except these lots, the land was very thin.

13th and 14th.—The very first crop showed the great improvement made by the use of marl, but its effects are best seen by the crop of corn at present on the farm. It is the largest I have ever made per acre, on the marled land.

15th and 16th.—From my own experience I should say, the effects of marl are decidedly permanent. My land has been subject for the last few years to the severest cultivation. One half in corn, the other in wheat annually. By manuring heavily with vegetable matter and not allowing stock to graze on the land, I have been enabled, even with this rigid course, to prevent its deteriorating.

17th.—I do not think any injury has been done, except on the poorest land, by the too free use of marl; and, even there, by carting straw on the land, it has recovered from the effects of the marl.

18th.—All these manures are certainly more efficacious with marl than without.

19th and 20th.—Before using marl the average corn crop was from three to three and a half barrels. The marl has increased the product of the corn nearly 100 per cent.

21st.—The wheat has been so much injured by the fly, variable seasons, &c., I can hardly say in what ratio it has increased; but the crops are certainly much heavier than before I used marl.

22d.—From the use of marl, and other manures, I estimate the value of my crops as being nearly as much again as they were formerly.

23d.—As far as my experience goes, I know nothing to contradict the views advanced in the "Essay on Calcareous Manures."

#### VALUE OF THE OLIVE.

From the New Orleans Bulletin.

Whenever the value of the olive is fully understood in the southern section of the union, we may expect to see great attention paid to its culture. The importance of the product may be estimated from the various uses to which it is put. In Spain, Portugal, the south of France, and many provinces bordering on the Mediterranean, the olive oil is used in immense quantities, forming an excellent substitute for butter, hogs' lard, or any other kind of grease which is used in such quantities in more northern European climes, or in this country, for preparing food. Thomas Jefferson said that of all the gifts of Heaven to man, the olive tree was next to the most precious, if not the most precious. He thought it might claim a preference to bread, because there is such an infinitude of vegetables which it renders a profitable and comfortable nourishment. A single pound of olive oil, that can be bought for six or seven cents, is equivalent to many pounds of flesh, by the number of vegetables which it will prepare and render fit for food. This oil is palatable, wholesome and easily obtained. It is singular that the tree has never been introduced here in the south, where the soil and climate must doubtless be congenial to

its growth. Wherever the orange grows, the olive will flourish—being a hardier tree—and it will live for ages, and bear abundantly. May we not hope that the enterprise of Louisiana will soon enrich the agricultural products of the state, by planting extensive orchards of the olive.

#### PUMPKIN SUGAR.

From the Magazine of Horticulture.

We find a notice in the *Gardener's Magazine*, of a method of manufacturing sugar from pumpkins, for which a patent has been procured by M. L. Hoffman of Hungary. M. Hoffman, together with M. Devay, has established a small manufactory of the article in Zamdor, in which they have already obtained forty hundred of sugar from pumpkins, a small part of which they have also refined. One hundred weight of pumpkins yields as much sugar as one hundred weight of beet roots, but the space of a hectare, viz.: two acres, one rood, and thirty-five perches, yields three or four times as large a quantity of pumpkins, (according to their weight,) as the beet root: the space occupied by Indian corn growing between the rows not being included, eight hundred weight of sugar could be raised on sixteen hundred square toises, from which two hundred hundred weight of pumpkins is obtained, and sometimes over two hundred and sixty hundred of pumpkins. M. Hoffman has obtained from between twenty-six and twenty-seven hundred weight of pumpkins, one hundred weight of sugar, and as much syrup. In making the sugar, the pumpkins are cut in pieces, and then, with the rind, are rubbed on a grating, the same as is used for beet root, and the seeds, which produce an excellent oil, are kept separate. One pound of oil is obtained from five pounds of seed. The juice is obtained from the grated pumpkins in the same manner as from beet root. M. Hoffman obtained, from an indifferent press, eighty-two pounds of juice, containing a proportion of sugar of from 3<sup>d</sup> to 10<sup>o</sup> according to Baunce. The juice is far preferable to that of beet root, because it does not so soon lose its virtue, but remains good twenty-four hours. It is purified and cleaned by the same process as beet sugar. The pumpkins should be cut up in pieces before they are grated.

This discovery may be of some importance to the agriculture of this country. In the west, where such immense crops of pumpkins may be produced, it will prove more profitable for cultivation than the sugar beet.

#### LIMING ON THE PENNSYLVANIA "BARRENS."

To the Editor of the Farmers' Register.

U. S. Ship *Levant*, Jan. 9, 1841.

I have been ordered to sea, and have broken up my farming establishment, and my object in writing this is to discontinue my subscription for the 'Farmers' Register.'

I wish you full success in your public-spirited publication, and consider it honorable to Virginia that an agricultural paper, of so high a scientific cast, is supported as well as yours is. Your efforts

to extend the use of marl and lime are beginning to be appreciated, and are operating upon the community to an extent of which you probably have no conception.

While on this subject, I will mention a circumstance in another state, which has recently come to my knowledge. I am a native of York, in Pennsylvania, and recollect, in my boyhood, hearing "the barrens" frequently spoken of. This was a large extent of sandy country, commencing about five miles from York, and proverbial for poverty. The land was considered scarcely worth accepting as a gift. A townsman, whom I met a few days ago, tells me that they have lately taken to liming this section, and that the value of it has in consequence suddenly started up to \$50 per acre. Many of the farmers now prefer it to the rich but heavy soils by which it is surrounded, as they consider it less liable to suffer from the summer droughts. York and Lancaster counties, you know, are considered the garden of Pennsylvania; and it is a circumstance worthy of note, that a sandy region in their midst is beginning to have such a value merely from the use of lime. In my last visit to York, I was surprised to find how much the limestone quarries in that neighborhood had increased in value, and how rapidly the lime-kilns in the neighborhood of the town have multiplied, in consequence of the demand of this article for agricultural use. And this, it must be remembered, is in a region where farmers are proverbially skilful, and where they never throw away a cent on wild or useless schemes.

If you think think the above useful you are at liberty to publish it.

Geo. Jones.

P. S. If any of your subscribers take pleasure in a fine-looking poultry yard, allow me to recommend the Bucks county (Pa.) fowls. They can be purchased in Philadelphia—cost high; but are of extraordinary size.

#### SEASONABLE HINTS.

The following extract from Col. Macerone's 'Seasonable Hints,' appeared in the *Mechanics' Magazine*, dated February 3, 1838. After stating the utility of sheep-skin clothing, for persons whose employment renders it necessary that they should be much out of doors, &c., he says—"I will not conclude without inviting the attention of your readers to a cheap and easy method of preserving their feet from wet and their boots from wear. I have only had three pair of boots for the last six years, (no shoes,) and I think that I shall not require any others for the next six years to come! The reason is, that I treat them in the following manner: I put a pound of tallow and half a pound of rosin into a pot on the fire; when melted and mixed, I warm the boots, and apply the hot stuff with a painter's brush, until neither the sole nor upper leathers will suck in any more. If it is desired that the boots should immediately take a polish, dissolve an ounce of bee's wax in an ounce of spirits of turpentine, to which add a tea-spoonful of lampblack. A day or two after the boots have been treated with the tallow and rosin, rub over them the wax in turpentine, but not before the fire. Thus the exterior will have a coat of wax alone, and shine like

a mirror. Tallow, or any other grease, becomes rancid, and rots the stitching as well as the leather; but the rosin gives it an antiseptic quality which preserves the whole. Boots or shoes should be so large as to admit of wearing them with cork soles. Cork is so bad a conductor of heat, that, with it in the boot, the feet are always warm on the coldest stone floor.

EXTRACTS FROM THE ADDRESS OF JAMES M. GARNETT, TO THE AGRICULTURAL SOCIETY OF FREDERICKSBURG, VA., NOVEMBER 13TH 1840.

On this occasion, my friends, as on several other of our anniversary meetings, I shall commence what I have to say to you, with a detail of such experiments as I have made since we last assembled together. Although few in number, I hope they will be deemed, at least, equally interesting with any which I have heretofore communicated. And first, I will speak of Indian corn—that king of all grains; since it is not only our chief staple throughout all the tide-water portion of Virginia, but really has higher claims to our attention than all other grains, on account of the far greater variety of uses to which it can be applied. This should lead all corn-growers to continual experiments, with a view to ascertain which, among all the varieties now cultivated, is best for every purpose. And true it is, that many trials—called *experiments*—are frequently made, but most of them in a way so loose and inaccurate, as to leave the matter quite as much in doubt as before the trial. Thus each man is apt to have a pet corn of his own, which he fondly conceits is the best in the world, and consequently is almost sure to give it some advantage over all with which he compares it—if indeed, he ever prevails on himself to bring any others into competition with his favorite. Again, the few, comparatively speaking, who experiment at all, instead of making their trials as accurate as possible, by choosing similar ground of precisely the same dimensions and fertility, giving it similar culture, and then accurately measuring the quantities produced by each piece—generally content themselves with merely judging by sight. In all such cases, if the experimenters happen to be popular agriculturists, it is taken for granted by their admirers, that their opinions must be correct; and thus the varieties of corn which they recommend, frequently get into very extensive use, without having any just claims to preference. This we might all easily avoid, simply by making experiments for ourselves, with the necessary degree of care and nicety, instead of trusting implicitly to others, when under no necessity whatever to do so. But it is idle, perhaps, in me, or any other person, to preach against the most pernicious practice of unnecessarily taking things for granted, since thousands upon thousands of our race have been following it from the earliest records of time to the present day. It is the prolific, the inexhaustible source of all the fooleries, frauds, and humbugs that have ever prevailed throughout the world—none of which could ever have injured mankind to any great extent, but for their own highly culpable credulity. Let this suffice by way of pre-

face to my experiments, which I now proceed to give you.

The first made this year was—a second trial with the Chinese tree-corn, which I should prefer calling Thorburn's corn, as he introduced it, and very few plants that I have ever seen, are less like a tree. The result of this experiment was so similar to the one made in 1839, that I think myself warranted in forming the following conclusions in regard to it: First, it ripens sooner in our climate, than any of 6 or 8 early varieties that I have ever tried, except the golden Sioux, which is very unproductive. Secondly, it is fit to grind by the last of August, if planted by the first of April; and it will produce roasting ears in 90 days. In the next place, it is much more productive than any other dwarf-corn. And lastly, I infer from the two trials already made, that in all land of medium fertility, it will probably yield more per acre, although not more by the hill, than any of our common large varieties, since you may plant it so close as to have rather more than double the number of stalks. For instance, in land wherein the usual distance given to our common kinds of corn is five feet each way, with two stalks in a hill, the Chinese corn may be planted four feet by three, with the same number of stalks, which is as 12 to 25. This distance I gave it in both trials, and the produce last year was at the rate of six barrels and two bushels—this year, on similar land and with similar culture, it was at the rate of six barrels and one bushel. The ears, when perfect, will average about eight inches in length, sometimes as much as ten, having from eight to sixteen rows upon a cob, of middle sized whitish grain, very flinty and weighs within a fraction of 64 lbs. per bushel. Last year I stated the weight to be 58 lbs., but the corn was then weighed immediately after gathering, before it was thoroughly dry, which accounts for the difference here stated.

In the culture of this variety of corn, I have noticed more particularly than heretofore a circumstance which has often excited my attention, and for which I can in no way account, but on the supposition that the pollen or farina of the tassel, which impregnates the grain, often changes the constitution thereof, when different varieties are planted near each other, before the changes become visible; although it generally shows itself the first year. Thus the ear of corn, which I bought of Mr. Thorburn last spring twelve months, was covered with grain exactly alike in color, size, shape and texture; yet the produce of that ear consisted of at least six dissimilar varieties—if, indeed, what we call a variety is constituted (as we generally believe) by a difference in all the foregoing particulars. No other corn grew any where near this Chinese corn, and consequently each ear must have been impregnated from the tassels of some of the contiguous stalks. Another still more remarkable circumstance has occurred in gathering my twin corn, which constitutes nearly my whole crop. For four or five years I have been selecting the seed with the greatest care, and I believed that it was nearly pure. Yet a single and perfect ear has been found, in the midst of it, having 18 rows of small grain upon the cob, every one of which is of a deep reddish purple color, the like of which I have very rarely ever seen in any part of our country,

and certainly never planted. Whence then came the pollen to impregnate this ear? Is it conceivable, can we believe it possible, that it was wafted for many, many miles in a mass sufficient to saturate each grain of this one ear, and that not a particle should have fallen on the silks of any other ear in the field? This seems past credibility, and must drive us to the conclusion that the color, at least, of corn, if not all its other characteristics, may possibly be changed by something else besides the pollen of the tassel.

I will here mention another circumstance relative to the physiology of the corn plant. In my last address, I stated as a fact which I supposed was known to every body, who had ever minutely examined a ear of corn, that the silk of the ear communicated immediately with the small end of the grain by which it was attached to the cob. This was represented by some writer in the Albany Cultivator, as an *error*; and he asserted, as a matter not to be doubted, that the silk was attached to the *outer* end of the grain. Unwilling to be positive, even when most confident that I am right, I determined to ascertain thoroughly, as soon as the season permitted, which was mistaken—my commentator or myself. For this purpose I examined, as accurately as possible, many ears of corn, and procured the aid of others, in searching most carefully, for silks connected with the *outer end* of the grain. Not one could we find; but we traced thousands to those points of the cob to which the small ends of the grain were attached. Here the ends of the silks adhered so firmly, as to require some little effort to pull them off, after the grain had been separated. I know not that the fact is of much consequence to corn growers in general. But it is of some importance to myself, as I deem it necessary to convince you, that on such occasions as the present, I never advance any opinion, or state any thing as a fact, which I have not maturely considered.

I attempted two other experiments with varieties of corn, which I had not tried before. One was a yellow kind from Lancaster county, there introduced from our Eastern Shore, under the name of Russel-corn, where it bears a high character. The other also was yellow, and from the great Valley of the Wabash in Indiana. The grain of the latter was very large, and more flinty than its produce, which somewhat resembles our yellow gourd-seed corn. The cobs have 16 rows of grain; but the stalks had only single ears, although in strong land, from which it is probable that in our climate this variety would not be more productive than some of our own yellow kinds. The former variety produced a better looking and heavier grain, to judge merely by the appearance; but it was not planted in a situation to enable me to form any correct opinion as to its relative productiveness. So far as this one trial will justify an opinion, I think that the Russel corn will probably prove preferable to the yellow kinds heretofore tried in this part of the country; although I have never yet met with any of that color, which would produce, (unless I greatly err,) within ten or fifteen per cent. as much as the most productive of our white kinds. This is a difference in quantity for which the higher price of the yellow, in our northern markets, will not compensate; to say nothing of the fact, that not one southern

man in a hundred, will ever eat yellow corn-bread, when he can get white. To our taste, there is nearly or quite as much difference between the two, as there is between a choke pear and a fine Seckel or bergamot.

Permit me here to call your attention to another circumstance relative to this invaluable grain—Indian corn—as it serves to confirm certain opinions which I have heretofore expressed in regard to its culture, that many have deemed very heterodox. In the Farmers' Register for last month, there is a letter from Mr. W. W. Stevenson, dated Little Rock, Arkansas, wherein he states, that in 1834 he planted a small lot of corn, in a light, silicious soil, with a red clay subsoil, the hills 4 feet apart. This he cultivated solely with the single coulter, running it both ways, seven or eight inches deep, the strokes 8 inches apart, and within 4 inches of the plants. The summer, he says, was very dry and warm, but his corn "*never twisted at any time*," although the coulter was used 4 times. In September he cut off some of the corn to make room for a building, and found roots more than 20 inches below the surface.

Now supposing this statement to be true, and we have reason to presume that it is so as the writer has given his name, it affords a strong confirmation of what I have often asserted, that the cutting of corn roots to a considerable degree, during its growth, does not injure the crop (if at all) to any thing like the extent to which the advocates of mere surface culture contend that it does. I certainly would neither adopt nor fully recommend Mr. Stevenson's practice. But I have often seen the most conclusive proofs that the free use of the coulter, particularly in all stiff land, was highly beneficial to corn in the early stages of its growth, and that no other implement could so well secure it against the effects of severe drought. It is equally advantageous to various other plants—for instance, a friend of mine tells me, that during the late very dry weather he coultured his turnips, and they remained perfectly green, when every other patch that he saw was much fired. Against these facts we have nothing but the theoretical reasoning on the subject of cutting the roots of growing plants. But plausible as it may seem to many, I must think that we should always be guided and governed by the former, when we find any difficulty in reconciling them with each other. That there should still be controversies in regard to almost every particular connected with the Indian corn crop, so that the best methods of managing it are matters yet undetermined among us, is much to be regretted. Nor is it less surprising when we consider that, at least in Virginia, corn has been our chief staple ever since the country was settled. But ignorance of the best methods must still be our portion, unless each corn-grower of our country, instead of conceiting his own ways to be best, (as too many of us constantly do,) would impartially and diligently pursue a course of comparative experiments between the modes most generally recommended, solely with a view to ascertain which was preferable. \* \* \* \*

I have repeated two experiments with Irish potatoes, both of which contribute to confirm opinions deduced from my previous trials. The first was by planting in hills, the shoots from growing roots, after these shoots were six or seven inches

high. The ground was fresh, and of good quality, but not such as could be called rich: yet the produce was at the rate of 302 bushels per acre, of tubers more uniform both in size and shape, than any which I ever raised, either from whole or cut potatoes, in the common way, and there were fewer small ones among them—the general size being quite as large as usual. Indeed, I thought it larger, if there was any difference. The ground was worked twice with the hand-hoe. In this method there is a manifest and considerable saving of seed, whilst the labor is not greater than that of the common modes, nor indeed quite so great, while the produce is fully equal to any but that of my second experiment, which I now proceed to state. This was made with the common, round, yellow potato, some of which had skins of a reddish purple color. I planted them whole on a level surface, about 3 inches deep, 15 inches apart each way, and then covered them with dead vines of the Lima beans, garden-flags cut green for the purpose, and lastly, dead grass scraped from the garden walks—the whole forming a cover about 5 or 6 inches thick. This remained undisturbed, until the potatoes were taken up. The spot of land measured only 24 square yards, and produced 2½ bushels of very fine roots, which is at the rate of 504½ bushels per acre. It was an old strawberry-bed, so thickly matted with green-sward that I had it spaded up last fall; and this spring, just before planting, I scattered over it about a bushel and a half of the scrapings from a lime-kiln of shells burnt on the ground, which scrapings were chopped in previous to planting the potatoes. I think I may safely affirm that the produce would have been greater, but for five garden trees. One of these grew at each end of the bed, and the other three to the west, distant from it only the breadth of a garden-walk about five feet wide. This is the third trial I have made of raising Irish potatoes in this way, and it has convinced me that it is by far the best method, both for saving land and labor, at the same time that the potatoes are certainly of equal, if not superior quality, and exceeding in quantity any other mode yet tried among us. To these advantages we must add, that it greatly improves the soil, and prepares it finely for any other crop.

I have again tried the sugar-beet, but shall not make much more than half a crop. This failure has proceeded from two causes. A severe drought in September and October was one cause; and the almost entire destruction of the leaves in September, by some insect which I could not discover, was the other. They took, however, a second growth, which saved the roots from destruction. But if a late writer in the Albany Cultivator may be credited, this crop is worth little or nothing; for he asserts that he fed away last winter and spring, some fifty-odd ton to hogs and cattle, without perceiving any benefit, except some increase of milk in his cows. It is true, that there are, I believe, some hundreds of well authenticated experiments, accompanied by results very minutely detailed, of most manifest benefits from the use of the sugar-beet, in feeding both cows and hogs; so that we may venture, without at all impugning this gentleman's veracity, at least to pay very little regard to his solitary authority, until more gainsayers may join him. We may, I think, go a little farther, and suspect him of belonging to that class of

farmers whose eyes can rarely see any thing which operates against their preconceived opinions.

With respect, however, to root crops in general, it is evident that none of us, especially in Virginia, have yet bestowed on them that attention which they well deserve. Still less have we ever made any such trials between the different kinds, as would enable us to determine certainly which should be preferred. Hence, opinions vary almost beyond computation, and, what is very remarkable, the two roots which most farming books pronounce to be the best, I mean carrots and parsnips, we very seldom cultivate at all, except for table use. Nothing but a long course of trials, often repeated, and accurately made, can ever settle this much mooted question; and such a course, I fear that very few of us will ever take the trouble to pursue, however desirable it may be. But until we do, we surely ought to abstain, most carefully, from dogmatizing on the subject—not only because it will be discreditable to ourselves, but injurious to our cause.

Another of my experiments which I deem worth stating, was with a mixture of clover, orchard grass, and timothy seed, sown and rolled immediately after wheat, which was put in about the middle of October, 1839, with the large 2 horse-harrow. The ground was an old clover-lot that had been well ploughed about a month before. But a small portion of the clover-seed was clean, the rest having been cut when ripe, was thrown into small cocks, and suffered to remain on the ground, until just before it was sown. It was then trodden out, and after the stems were taken out, was immediately committed to the earth. The unclean seed came up much better than the clean, but did not show well, until the spring, when it soon appeared to have taken perfectly. After the wheat was taken off, it attained by mid-summer, an average height of nearly 3 feet. The timothy and orchard grass seed both failed, probably from being defective. This experiment, which I have known to be successfully tried on several other farms in the middle states, justifies the conclusion, that to clean clover seed is a needless trouble and expense, and that in our climate, unclean seed sown upon wheat in October, will very rarely, if ever fail to come up well, whereas, clean seed, sown as usual, on wheat in the spring, without harrowing, will almost certainly perish. With me, it has done so, I think at least 5 times out of 6. Another great advantage in fall sowing is, that you may cut your clover, at least 7 or 8 months sooner, than if you sow in the spring.

My experiment with ruta baga was made by sowing the seed on the same ground which produced them last year. It was first well manured from the horse stables and cow yard. I was induced to make this trial by having heard from several persons of unquestionable veracity, that they had known many old planters successfully to pursue this practice with the common varieties of turnip, for a number of years in succession. The reason they assigned was, that this method always secured the turnips from the fly, and without any diminution of the crop, if the ground was manured each time of sowing. Whether this be true or not, certain it is, that no fly has molested my present crop of ruta baga, and that it promises to be quite as good as that of the last year, making due allowance for the excessive drought, du-

ring a part of the two last months. If the old planters referred to, were right in their opinions, as to the effects of their practice, it forms another striking exception to the alleged necessity of the constant rotation of crops, (beneficial as I admit it to be generally,) in preserving the productiveness of our lands, whilst this practice goes far towards disproving the correctness of the opinion maintained by the celebrated botanist, M. Candelolle, and a few others, that every plant when ripe, deposits in the earth, some substance which is poisonous to plants of the same kind. True it is, that lands are said to "*get sick*" of the same crop, (clover, for instance,) often repeated, although I have known this repetition to be made of several different crops, for many, many years together, without any apparent injury whatever. But surely, even if we admit the sickness to the fullest extent, we may easily account for it, without the agency of poison—simply by supposing that the diminution of the crop arises solely from the lessening of its appropriate food, and must necessarily continue until that food is restored in proper quantities, by the application of some of those fertilizing substances which contain it. To look farther than this for an explanation of so common an occurrence as the impoverishment of our lands, seems to me to be taking a very needless flight into the boundless regions of fanciful theory and visionary speculation—a practice, by the way, which has excited stronger prejudices among the illiterate, against agricultural works in general, than all other things put together.

Before I conclude the subject of experiments, I will here call your attention to one which I stated two or three years ago. It was made with Guinea grass which I neglected after two trials, from a belief that it could not be here acclimated. In this I find myself mistaken; for a small spot which was not destroyed, has increased so much as to become a thick mat of grass that reached this year a height of at least five feet, in land by no means rich, and ripened its seed. I can now certainly say of it, that you may cut it four, and in good seasons five times, that in good land each cutting will be about three feet high, and that it stands drought better than any other grass I have ever tried. It is best propagated by the roots, which should be cut into pieces two or three inches long, and planted about three inches deep, in rows 15 inches by eight or nine apart. The ground requires cultivation the first year. I cannot say to what kind of soil it is best adapted, having tried it only in high land, the soil of which is rather light.

#### THRASHING MACHINES.

To the Editor of the Farmers' Register.

Halifax, N. C. Jan. 8th, 1841.

Having sown a large crop of wheat, and intending to put a full crop of cotton and corn in the ground this spring, it is of course a great object with me to save all the *manual* labor possible. I should be glad, therefore, if you will give your readers, through the medium of your valuable journal, all the information you can as to the advisability of purchasing any of the newly invented reaping and thrashing machines; and would be glad also, if convenient, that you would mention their cost, and where they can be best procured.

I have just received one of Barnum's machines for heating water, and, so far as I have tried it, think it better suited to the laundress than the farmer.

[We cannot yet recommend the new reaping machine, (Hussey's;) because we have not yet seen a trial of it; and those who have tried it differ as to its merit and economy. As to thrashing machines, our correspondent, and every man who makes even as much as 500 bushels of small grain, ought to have one. We cannot pronounce as to the best; but we lately chose and bought one of Jabez Parker, Richmond, with his horse power annexed, for four horses, for our own use, which was put up complete for \$236. We are well satisfied with it.—Ed. F. R.]

#### PROPAGATION OF THE ROSE.

From the Southern Cultivator.

There are reckoned by botanists about fifty species of the rose, and from twelve to fifteen hundred varieties. Many of the most choice kinds that I have seen are hardy shrubs, capable of withstanding our winter weather in the open garden, and, as before observed, bearing buds and flowers from April to November. Any of these may be propagated either by layers or cuttings, or by budding, and may be re-produced from the seed. If you desire to propagate by layers, (which is one of the surest methods,) in the month of April or May, or even later, bend to the earth a small branch or shoot of last year's growth, and bury it three or four inches beneath the surface, leaving its extreme end out of the ground, and the other end in connection with the bush; it is also necessary to place a flat rock, or other weight, over the part which is under the ground, to prevent it from rising up, and also to retain the moisture about it. If the weather is dry, it may be watered with advantage. The layer will take root in a few weeks, when it may be separated from the parent stem. In the month of October or in the early part of November, it may be transplanted into any rich soil where it will maintain an independent existence. Sometimes it is very difficult to get a layer to take root; when this is the case you will be very apt to succeed by cutting the layer half in two and splitting it up about an inch and introducing a small wedge, and then proceeding as above directed.

To propagate by cuttings, choose a slip of recent growth, from five to eight inches in length. If the buds at the base of the *petiole* or common stalk of the leaflets is well developed, the slip is sufficiently old; otherwise, it is too young. The ends of this cutting may be either transverse or oblique, and may be planted in any month of the year while the sap is up, or in the month of November. I usually prefer the month of April, August or September, and place two-thirds of the cutting in an oblique direction beneath the surface, leaving above only one or two inches, or one or two buds; if the cutting is planted early in the spring it will take root and blossom the following summer. Damp, cloudy weather is most favora-

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ble for planting, and the cuttings should be shaded until they take root. The smallest cuttings are sometimes the best, especially in the months of June, July, and August. Those at the extremity of which the rose has first dropped its petals are generally to be preferred, and when the buds above alluded to are full and well-formed, will generally succeed with more certainty than those of a larger size. These cuttings need not exceed more than four inches in length, or contain more than three buds. In planting it is sufficient to leave only one bud above ground. They should be well watered, and in very hot or dry weather the moisture may be retained about them by inverting a glass over them during the day.

The process of budding is also a favorite and speedy mode of propagating the rose, but may be readily seen by consulting any of the works on gardening, as also the manner of sowing seed, to which source I must refer the reader.

#### CONVENTION OF TOBACCO PLANTERS.

Hon. Daniel Jenifer, from the committee of thirteen members appointed yesterday to consider and recommend as may be deemed most expedient to be adopted by this convention, made the following report.

Mr. Jenifer, from the committee appointed by the President to consider and recommend such measures as may be most expedient to be adopted to accomplish the objects of this convention, reported that the limited time allowed them has compelled the committee to confine their report to a general review of the subject.

That since the adjournment of the tobacco convention which met in this city on the 1st, of May last, there has been no change in the burdens and restrictions imposed upon the tobacco trade of the United States by the nations of Europe, except in some unimportant matters by one or two kingdoms; and the facts stated by the committee in their report to that convention are now referred to, and by us reasserted, and their arguments and suggestions adopted. Since the publication of the documents by Congress at their last session, no correspondence has been received at the department of state on this subject, except a few unimportant communications from Sardinia and Belgium. No change has taken place with foreign governments in regard to this staple, and from what has already transpired, we have no hopes of a favorable action on their part until the Congress of the United States shall adopt measures commensurate with the object.

Great Britain still continues her excessive duty of seventy-two dollars and seventy-five cents per hundred pounds, or eight hundred per cent. on the prime cost of this article of our produce, while we continue to receive the product of the labor of her citizens at an average duty of twelve and a half per cent.

France yet continues her still more odious monopoly or *regie*, retaining in the hands of her king, or those to whom he sells the privilege, the sole right to import, manufacture, and sell American tobacco in that kingdom, by which the quantity of American tobacco consumed in France has been reduced to six or seven thousand hogs-

heads per annum, from which she derives a revenue of ten millions of dollars.

Russia, Spain, Portugal, and some of the minor powers of Europe adhere to their various monopolies under different names, but all tending to the manifest oppression of this our staple. And the Germanic powers included in the *zoll verein* or commercial union of Germany, have not reduced any portion of their transit duties or abated in the slightest degree their commercial system in which tobacco is the article most heavily taxed, as it is indeed in every nation in Europe, except Holland and Belgium. They have met us in that spirit of equality and justice which should ever exist between nations having friendly commercial relations; who have a right to insist upon and never should be satisfied without a free exchange of commerce on equal and reciprocal footing.

Treaties with several of the European governments expire in a few years, and a just regard to the planting interest requires that they should not be renewed unless the odious burdens and restrictions imposed upon the staple of tobacco be modified.

The treaty with the Hanseatic Towns of Lubec, Bremen and Hamburg, expired by limitation in December, 1839, but continues in force until twelve months' notice shall have been given of the intention to terminate it, and a fair opportunity now presents itself to our government to do us justice with these powers.

The American Ministers at the Court of Great Britain have for many years urged, with great ability, on that government, the propriety of diminishing the duty on tobacco, as a matter of justice to the United States on general principles of policy and free trade between two friendly nations; and we have shown by arguments which we think it would be difficult to answer, that, even as a measure of revenue, these excessive duties on this article, to a great extent, defeat their own object. But arguments have proved unavailing, and Great Britain continues her duty of 72½ cents per pound on this product of our labor.

With equal ability our Ministers to France, commencing with Mr. Jefferson, in 1783, and continued down to the present time by Gen Cass, have remonstrated against the French system of monopoly as injurious to the American tobacco growing interest, and unjust by its departure from that reciprocity and equality which the French nation had insisted upon with some sternness, in their communications with our Minister in 1785, in all their commercial intercourse with the United States. Their remonstrances have met no other response than an act of the French chambers extending the law creating the monopoly of American tobacco to the year 1852.

By negotiation, therefore, nothing can be expected from her. The last ray of hope from that source has expired, and the American Tobacco planters must look to that tribunal which can alone afford them relief for the evils they endure—to the Senate and House of Representatives of the United States in congress assembled, we their constituents must appeal for a redress of the grievances herein set forth. And we rejoice that this appeal has been most ably seconded from other sources in various states in the union.

Amongst our agents abroad communications from Mr. Dodge and Mr. Miles have been repeat-

edly received by our government, which evince great zeal and labor in the different spheres in which they have acted.

We have seen with pleasure a resolution introduced into the Senate of Georgia to instruct their senators, and request their representatives to use their best efforts to have a law passed by congress to tax all French wines, silks and brandies, in proportion to the duty which they lay upon our tobacco in their ports. The governor of Virginia has called the attention of the legislature of that state to the subject in his message to them at their present session, and submitted whether it is not expedient, through their representation in congress, to enforce the just claims of their tobacco planters to a reduction of the enormous duties imposed on tobacco by most European governments.

And as early as January, 1837, the legislature of Maryland unanimously passed the following resolution:

*Resolved*, That the senators and representatives of this state in the congress of the United States be requested to take under their especial care this highly important and much neglected interest, and that they be particularly requested to oppose all and every adjustment of the present tariff, without obtaining for the tobacco interest a fair and equal participation in the benefits to be derived from such adjustment."

In conclusion, your committee recommend to the convention the adoption of the following resolutions:

1st, *Resolved*, That the only effectual remedy for the evils the tobacco interest labors under from the high duties imposed by Great Britain, and the monopolies of France and other nations of Europe, is to be found in the action of congress, by countervailing duties: and that the convention relies on the wisdom of congress in discriminating between those governments which *have* and those which *have not* manifested a disposition to abandon or modify their present oppressive duties and restrictions imposed on tobacco from the United States.

2d. *Resolved*, That it be recommended to the government of the United States that the treaties now in existence with foreign countries which contain no stipulations for reciprocity in duties on their respective products be not renewed.

3d. *Resolved* That the governors of the several states of the union engaged in the cultivation of tobacco, be earnestly requested to call the attention of the several legislatures of their respective states to this subject of the American tobacco trade with foreign nations.

4th. *Resolved*, That a copy of the proceedings of this convention be laid before the Senate and House of Representatives of the United States, and that the senators and representatives from tobacco-growing states be earnestly requested to take such speedy and efficient means as in their judgment may be best calculated to accomplish the object contemplated by this convention.

The report and accompanying resolutions having been read—

The convention was addressed at great length by Hon. Philip Triplett and Hon. Jos. R. Underwood, of Kentucky; Geo. H. Stuart, Esq. of Baltimore; Hon. Jas. Garland, of Virginia; Walter Bowie, Esq. and Hon. Daniel Jenifer, of



Maryland; Hon. Walter Coles of Virginia; Hon. Wm. D. Merrick, of Maryland; Hon. John Jameson, of Missouri; and Thomas F. Bowie, Esq. of Maryland.

After which, the report and resolutions were adopted.

From the Richmond Whig.

THE EUROPEAN DUTIES ON TOBACCO. OPINIONS ON THE OTHER SIDE OF THE QUESTION.

[We have at several different times published articles in opposition to the European system of high duties on this important product of Virginia. We shall now present a piece taking opposite views of the question.—ED. F. R.]

I see from the papers, that much interest seems to be felt by the tobacco growers in Virginia (I shall confine my remarks to the interest of the Virginia planters) on the subject of high duties charged on the article of tobacco, by some of the European governments, and particularly by Great Britain where our finest and highest priced tobaccos are used; and France and Italy, where it is a government monopoly, and where our next *best and highest priced* tobaccos are used. The impression seems to prevail with the planters, and, probably, the politicians of our state, that if the duty on tobacco was reduced, or done away entirely in those countries, that the demand for the article grown in Virginia would be greatly increased, and that prices would thereby be higher, thereby greatly benefiting the planter and increasing the wealth of Virginia. Now, I believe this opinion to be erroneous, and that some few facts are worth a thousand theories, and may satisfy many that, in some things, free trade is not always the best for every body. In the first place, Virginia only raises about one-third of the tobacco made in the United States, and nearly one-half of it is manufactured at home, and the labor put upon it doubles the value—a good deal of which is exported in the manufactured state with the increased value, and is of a quality to command a preference, and in consequence of the high duties paid in the European markets named, particularly England, completely excludes them from competing with us in all the lesser markets in the world where the articles used are admitted at moderate duties or free. Again—tobacco is raised in Hungary and France and many other places in Europe and South America and the W. Indies, and very near, if not quite as much tobacco is raised in Europe and European possessions, as there is in the United States. Do our planters know this fact? Tobacco can be raised in Ireland to a great extent, and even in parts of Russia. Why has not more been raised in Europe, especially in Ireland, France and Holland? Simply because theirs is an inferior article to ours, and as such, could not pay the high duty that ours can bear. But look at Holland and Germany, where the duty is very inconsiderable, almost nothing, and you find tobacco so low in price, that these markets are worth nothing to the Virginia planter, except merely to take off some 5,000 or 10,000 hogsheads of lugs and inferior leaf, annually, at \$3½ to \$4½ and \$5. And why is this? Because

they use tobacco principally for smoking, and an inferior, cheap article will do; and, as there is little or no duty, the moment prices get above \$3½ to \$5, they resort to the use of their own growth—but at \$3½ to \$4 to \$5, they give the preference to American tobacco. Suppose the trade in Great Britain, France and Italy, placed upon the same footing of Holland and Germany, is it not reasonable to believe that all Europe, where tobacco can be raised, will raise it?—for labor is cheaper there than here. The consequence would be, more tobacco would be raised and more would be consumed; but the growers in Virginia would have to take what they could raise it for in Europe; for we must bear this fact in mind, that in Europe, (except in great Britain) they do not chew tobacco—they smoke and snuff. The Virginia tobacco is used principally for chewing and mixing with other tobaccos to make snuff; very little of it is used in smoking, and yet much the larger portion of tobacco used in the world, I presume, is consumed by smoking. There is now, and has been for years past, a demand for Virginia tobacco beyond her ability to raise it, and at prices paying the cultivator of the soil better than any thing else. Let the planters, then, raise more if they can, and when the product becomes so great that they find it necessary to increase the consumption, and they are willing to compete with the European growers, by selling their crops at \$3 to \$4, and \$5 to \$6 per 100 lbs.—then, indeed, it may be well to seek to have the duty taken off. But it does seem to me, that unless we can get foreign governments to take the duty off of all American tobacco, and to prohibit the cultivation of it by their own subjects, and to keep the duty on all tobacco raised in Europe, we have no right to complain, but should be well satisfied to find our better article protected by a duty so high as almost to exclude their inferior article, raised at home, and which, if used to any great extent, must reduce the value of ours. It is not the interest of our planters to cultivate double the quantity of ground, and exhaust their lands to make a large quantity of inferior tobacco, to sell at \$3 to \$5; they had much better cultivate half the quantity of land, make good tobacco, and get for it \$4 to \$10, as they now do. Those, gentlemen, are my views on this subject, hastily sketched no doubt erroneous some particulars—but in the general, I believe to be correct. My only object in presenting them is to benefit the tobacco growing interest and the trade of Virginia.

ANSWERS TO INQUIRIES RESPECTING THE MANURING AND ROTATION OF CROPS OF WORCESTER.

To the Editor of the Farmers' Register.

Westover, January 13th, 1841.

As I am now housed from incessant rains, enough almost to produce a flood, I have been looking back over the numbers of the 'Register' for the last year; and find in the August number a communication with the signature 'R,' asking of me information with regard to the application of my manure, under the change of system from the four to the five-field. I owe the author of the piece an apology for my remissness in not paying that attention to his wishes that he so much deserved at my hands; and now thank him for the



flattering manner in which he there speaks of my adopted five-field rotation.

In the communication I wrote, assigning my reasons for a contemplated change of system, from the four to the five, and published in your January number, (1840,) (and which by the way you did me great injustice, in the many typographical errors therein committed, enough to discourage another attempt almost in your columns,) I used the following very imperfect manner of expressing myself with regard to the mode of preparing the soil by manuring, for receiving the oat crop, &c.; although I think it might be inferred otherwise. The passage I used was this: "As the oat crop is so valuable a one with me for feeding my teams, I propose seeding one third of the field intended for peas in that crop, and on which I propose to put my manure. Should the manuring extend farther than the third for oats, I propose putting the remainder of the manured land in pumpkins, and the balance of the field of course in peas, &c."

In the paragraph here referred to, and about which the author of 'R.' asks information, I did not probably express myself as understandingly as I should have done; I will therefore give the mode I contemplate improving the field intended for the oat crop. My habit and preference have been to manure as much land as I could for corn. The portion of the field to be manured for corn is allotted off, and not manured until after I have planted the rest of my corn crop, allowing the manure to remain in its compact state in the pens, to be trampled and dunged by the stock, as long as possible in the spring before it is broken, that it may become the better fermented. So soon as we have planted all of the field not intended to be manured for corn, which is not done before the 10th or 15th of April, and sometimes later, we turn in every thing to getting out all the manure we can in the portion of the field allotted to be manured, and for corn also; which is usually about one-third of the field. It is this portion of the field manured for corn that I propose seeding in oats the following spring—and not manured the same spring for the oat crop, as was inferred by 'R.' The manure made during the summer, fall, and winter, from the stables, hog-pens, &c., can be used for the oat crop alone, if preferred; as those manures might be in a state to be used. But the idea of using coarse, unfermented farm-pen manure, as early as would be required for the oat crop, never entered my head. And 'R.' is right enough in the opinion, that the manure of this winter would be in too crude and unfermented a state to be used for the oat crop of this spring; for my impression is that oats should be sown as early as the last of February with us; which would of course be too early to break the winter-farm pens of manure.

I prefer using the coarse manure in the foregoing manner for corn, to any other use to which we can apply it; because the corn crop is more benefited by it in its coarse state, probably, than any other crop. The succeeding spring it will constitute a fine pabulum for the oat crop to feed from. Benefiting the succeeding wheat crop essentially, and, I think, ensuring a clover crop, to resuscitate the land. By such a process we derive all the benefits that could possibly be expected from it, viz.: three grain crops and a stand of clover.

My mode of manuring, however, has been very various of late, and probably not used as judicious-

ly as it might have been. I have been governed by circumstances. Portions of my estate I found in good condition, while other portions were very much exhausted. My object has been to equalize its fertility as much as possible. To accomplish this object, I have been obliged to use my manure irregularly, and at times not the most desirable, or possibly with considerable loss. As soon as I can equalize the fertility of my fields, (which I hope soon to do,) I shall fully carry out the mode of manuring for the corn crop above recommended as the most judicious and preferable. I do not consider it so important as some do that the manure should be handled and prepared into a compost, with so much expense and trouble before its application. I think the great object should be to make as much as possible, and to give it to the earth, almost in any state, whenever you can. You will be sure to derive its benefits sooner or later. All the manure I make is certainly carried out twice a year, spring and fall, and sometimes oftener.

I have practised, I think, to great advantage, top-dressing my clover, early in the spring, with wheat straw. All the straw that cannot be carried through the pens in time to be sufficiently fermented is used in this way. And if a dry season, the benefit to the clover is very great. I have manured, by top-dressing wheat, but never to any advantage to the wheat crop. I have almost invariably lost it by the Hessian fly or bug.

Hoping that what I have written may prove satisfactory to my kind friend 'R.,' I remain, your friend and obedient servant,

JOHN A. SELDEN.

#### CRUSHED CORN-MEAL—WINTERING HOGS, &c.

For the Farmers' Register.

Indebted to the Farmers' Register for many valuable facts and suggestions, in relation to agricultural operations, I feel myself bound to endeavor to discharge the obligation I have thus incurred, by communicating, from time to time, for the benefit of your correspondents and readers, brief notes of such improvements in the prevailing modes of management in rural economy, as I can recommend to the adoption of my brother farmers, upon the authority of my personal experience and observation. A few words at present as to the best mode of wintering hogs.

My stock consists of two large breeding sows, far advanced in pregnancy. I design their pigs for pork next winter, and eleven shotts, eight about five and three about seven months old; all pronounced by my neighbors very fine animals. The pigs are confined in a pen of good size, so situated that they can bask at pleasure in the sunshine, and provided with a warm and dry sleeping apartment, separated from the body of the pen by a close wall of rails, about two and a half feet high, with a hole at one end for ingress and egress, and covered with a sloping roof of plank overlapping each other. The pen is not floored, but is kept sufficiently dry by an abundant supply of shucks, corn stalks, and refuse straw, out of which my pigs are industriously manufacturing several loads of excellent manure. My breeding sows run at large, because I have not found it convenient as yet to build a pen for them; but they find a warm bed in my stable, and rarely wander far

from my premises. I feed my hogs regularly twice a day, morning and evening. I would greatly prefer feeding young hogs three times a day, if I could do it with any sort of convenience, with slop made by boiling meal made of corn crushed in the ear, and ground corn and cob together. I find, by repeated experiments, that one gallon of crushed corn-meal, *well boiled*, will, when cooled, make about five gallons of thick mush. This mush I mix, in feeding, with about an equal quantity of hot water, frequently throwing into the pail a double handfull of bran, stirring it well, and give it to my pigs warm. I put a handfull of salt into the pot about three times a week, and occasionally a shovel full of ashes. With this allowance, my hogs are in fine order, in much better condition than any of my neighbors', and some of them are fat enough for the knife. I boil my meal at convenient times in a pot holding about five gallons. I prefer letting the water boil before the meal is stirred in. The meal is thoroughly mixed with the water by means of a flat paddle, and is suffered to boil violently for half an hour or more. I would prefer a cheap boiling apparatus, but having just commenced farming I have not yet found time to build a furnace. I shall be prepared, however, by next winter, to fatten my hogs on boiled roots and crushed corn meal.

With a large kettle, and a barrel to hold the mush, many gallons might be prepared daily in every kitchen, by the servants, after the meals are cooked, and especially at night by the large roaring fires which the negroes will keep to warm themselves by. I know no way, except, perhaps, by feeding on roots, in which hogs can be so well kept through the winter at so little expense. My stock of thirteen, for instance, consume only a peck of crushed corn meal, equal to a single gallon of corn, a day. This, at the rate at which corn is selling in my neighborhood,  $37\frac{1}{2}$  cents a bushel, is only one-third of a cent a day for each hog. The manure will more than pay for the extra trouble and expense of preparing the food.

This strikes me, on reflection, as even a cheaper mode of sustaining hogs through the winter than by feeding them with potatoes or sugar beet or mangel wurzel. A peck of potatoes, the usual daily allowance to each hog, would be  $6\frac{1}{2}$  cents a day, at the price at which potatoes are selling in my neighborhood; and, supposing that 500 bushels of sugar beet are equal in product to 40 bushels of corn to the acre, then, if each hog be allowed a peck of sugar beet daily, the 40 bushels of corn ground up, cob and corn together, and boiled into good slop, will, upon the principles of calculation furnished by my experiment, go more than twice as far as the 500 bushels of sugar beet. As to whole corn, it is evident that four times the quantity I consumed in slop, that is, a peck daily, would hardly keep thirteen hogs in living order. My corn is crushed at a neighboring mill, where I haul it by the wagon load, and take away the meal when I want it. For crushing and grinding I pay a toll of one-tenth.

A neighbor of mine, a large iron manufacturer, feeds his mules on crushed corn-meal mixed with cut straw, and though they work hard every day they are as fat as it is desirable to have them. Crushed corn-meal, at from 15 to 25 cents a bushel, according to the price of corn, is, it seems to me, the cheapest horse-feed that can be used. It is

certainly cheaper than oats, or rye, or whole corn. The farmers in this neighborhood are beginning to use it quite extensively. It is much healthier than whole corn, as well as cheaper.

A neighbor informs me that he fattened an old cow last fall on crushed corn-meal, that she fattened remarkably fast, made first-rate beef, and yielded an enormous quantity of tallow for a cow of her size.

I feed my milch cow twice a day with half a gallon of crushed corn-meal boiled in about four gallons of water; and I would not want better slop for a milch cow.

Crushed corn-meal being so valuable for feeding all kinds of stock, every mill, and every planter and farmer having a horse-power, either for a cotton gin or a thrashing machine, ought to be provided with a corn crusher. While he would thus promote his individual interest, the country would save millions of dollars annually. I observed, in a late *Cultivator*, a notice of a machine called "*the Virginia corn crusher*," which, after five years' trial, is represented by the manufacturer, Robert Sinclair, jun., of Baltimore, as an efficient and durable machine, not liable to get out of order, and crushing twenty bushels of corn per hour with one horse, fine enough for feeding any kind of stock. Mr. S. says he has sold a number of them, and that they have given universal satisfaction. If the machine is as valuable as it is represented to be, a tolerably large farmer would save the price of one (\$65) in a single year. Two or more neighbors might club together and purchase one, or several farmers might establish a machine at some mill in their neighborhood. The toll would soon pay for the machine.

While I am writing I would just caution your readers against throwing hog or beef lights to hogs; one of my neighbors having just lost two valuable sows by the carelessness of his negroes in this particular. The lights choke the hogs.

PLOUGHBOY.

Rockbridge, Va., Dec. 28, 1840.

#### CONVENTION OF COTTON PLANTERS IN ALABAMA.

For the Farmers' Register.

On Monday, the 7th instant, agreeably to public notice, a meeting was held at Greensboro', by a number of the planters of Greene, Marengo and Perry counties, for the purpose of ascertaining the extent of the present cotton crop in Greene and the adjoining counties.

The meeting was organized by calling Col. William Armstead to the chair, and appointing Isaac Croom, esq., secretary.

On motion of Dr. R. C. Randolph,

Resolved, That the chairman appoint a committee of twenty-four, to report to an adjourned meeting, to be held at Greensboro', on Monday the 14th inst.

Pursuant to the foregoing resolution, the chairman appointed the following gentlemen to compose said committee, viz.: Dr. R. C. Randolph, Rev. Wm. W. Hill, Thomas M. Scott, esq., Wm. F. Bentley, esq., Dr. Jno. R. Witherspoon, Thomas H. Herndon, esq., Rev. J. E. Sawyer, Wiley J. Croom, esq., Col. John Nelson, James McDonald, esq., Col. Harris Tinker, Col. Robert C. Macon, Dr. Wm. T. Herndon, Rev. Lemuel

D. Hatch, Wm. W. Britton, esq., and Theo. B. Randolph, esq., of Greene—James H. Ruffin, esq. Samuel S. Strudwick, esq., Col. Byrd M. Pearson, Andrew P. Calhoun, esq., and Col. James Pickens, of Marengo—and Col. Richard B. Walthall, Jabez Curry, esq., and Q. T. C. De Yampert, esq., of Perry.

The convention then adjourned until Monday, the 14th instant, at 12 o'clock.

*Greensboro', December 14, 1840.*

The convention met according to adjournment.

The committee of twenty-four appointed at the previous meeting, through their chairman, Dr. R. C. Randolph, presented the following report and resolution, which were unanimously adopted.

The committee appointed by a former meeting to inquire into the reported deficiency of the present cotton crop, as contrasted with that of 1839, would state to the present meeting, that they have given the subject due consideration, and that they have visited neighborhoods and made inquiries of planters in Perry, Marengo and Greene counties, and submit the following facts and reflections.

The summer and autumn of 1839 were highly favorable for harvesting; notwithstanding which, the cotton crop in the three counties above mentioned was not generally gathered until the month of March, 1840. The summer and autumn of 1840 have not been so favorable. There has been more sickness, the cotton which suffered by the invasion of insects did not mature as early as in the previous year, rains have been much more frequent; and yet the crop is now nearly all gathered, and will, it is believed, be entirely so by the first of January. The aggregate production in 1839, of seventy-six plantations, was 17,008 bales; while the yield from the same plantations, in the present year, has not, and cannot exceed 8,261 bales.

The plantations from which these facts have been derived include every variety of soil found in these counties, from the rich lime lands to the poor sand hills. The falling off in the production is greater upon the lime land than the sandy ridge. Upon the former it is believed to be generally more than half, and upon the latter one-third. The large bulk of cotton produced in these counties is usually derived from the lime lands.

From these considerations, the committee are of the opinion that the aggregate production of the present year, in the counties of Perry, Marengo and Greene, has not amounted to more than half of the yield of the previous year. In conclusion, they ask leave to submit the accompanying resolution.

Resolved, That entertaining the belief, from the best information we have been able to collect, that the relative deficiency of the present cotton crop, throughout the whole cotton growing region, is fully equal to that in the section represented by the meeting, we earnestly invite the whole body of southern planters to hold similar meetings, that an early opinion, approximating very nearly to accuracy, may be found as to the entire crop of 1840, and fortified in such manner as to leave the matter beyond doubt or cavil.

On motion of Thomas M. Johnson, esq.,

Resolved, That the proceedings of this convention be published in the papers of the cities of

Charleston and Mobile, and in those of the counties of Greene, Marengo and Perry.

The convention then adjourned *sine die*.

Wm. ARMSTEAD, Chairman.

ISAAC CROOM, Sec'y.

#### A COMMON OBJECTION TO AGRICULTURAL PERIODICALS, AND ESPECIALLY CONSIDERED IN REGARD TO THE FARMERS' REGISTER.

The Farmers' Register, throughout its whole course, however scantily supported by subscriptions and by written contributions, has been at least most bountifully fed with compliments and praises; and if such pleasant, but unsubstantial food, were sufficient for its sustenance, growth, and utility, there would certainly be no ground to complain of neglect. We readily admit that the complimentary expressions which have in many cases been uttered to us, and of our work, have been more kind and more favorable than the actual state of things deserved; though certainly not more so than would have been deserved, if some solid aid, and especially that of written communications, had been bestowed, instead of praises given by those who gave nothing else. But the highest commendations have frequently been accompanied a species of censure of the work which was at least as much undeserved; and which was founded on mistake in part—and which so far as deserved at all, the censors themselves should be held responsible for, and not the editor, or his publication. The objection referred to has been often, to our knowledge, stated, and therefore we infer is generally understood to exist, by our brother farmers in agricultural regions remote, or under different circumstances, from lower Virginia, where the work has been published—and who also have not been its constant or frequent readers. Whilst (in most cases) allowing to it high, or even an undue degree of merit and usefulness for the circumstances of lower Virginia, it seems to be taken for granted that the subject matter exclusively relates to the peculiar culture and means for improvement of that region. The farmers of the west, and even of the mountains of our own state, say, "Of what use can the Farmers' Register be to us? We want to know about grass, and meadows and cattle." Many of the tobacco planters of the middle country say, "What use can we make of the Farmers' Register? We have no marl." Most of the planters of the great cotton region think that they have still better ground to object to the difference of the agricultural conditions of our respective regions. We speak not of any farmers north of "Mason's and Dixon's line;" for they nearly all hold every thing in and

about southern agriculture and agricultural opinions, in supreme contempt.

The same objections may be and probably are alleged against all other well known agricultural publications in our country; but it is enough for us to speak in regard to our own.

In the first place, then, the charges are not correctly founded in point of fact. We admit, generally, and regret that it should be so, existing deficiencies of practical information on *every branch of agriculture*—deficiencies too which could be well and easily supplied by hundreds of different individuals among our subscribers and readers. And truth requires that this admission should extend to the culture and the improvements of our near neighbors, as well as to remote regions and other modes of culture. But we deny, and refer to the past publication for the proof, that the contents have been at all exclusive in regard to subjects, or that any one interest has been neglected, or kind of culture overlooked, if it was possible to obtain articles thereon to publish. The farmers of the Valley, and graziers of the more western mountains of Virginia, if they had examined, before charging a deficiency by guess, would have seen that marked attention has been given in this work to all their peculiar agricultural interests. Besides hundreds of minor articles, embracing every thing original that has been communicated, and all that is worthy of republication from other journals, there are the long articles, with numerous and beautiful and costly engravings, on the various breeds of cattle, and the entire works of Stephens and Johnstone on draining and irrigation. Both the latter new and expensive works we specially imported for the purpose of republication, when not a copy had before reached this country; and of these works alone, we would say that if a draining or grass and cattle farmer received no other benefit from our eight volumes, he would not be a loser on his out-lay.

In like manner, tobacco culture, and other branches of agriculture of the middle country, have been treated of by some of our correspondents in many extended and able articles in our early volumes. One alone of these pieces was said by one of our wealthy subscribers, would pay him for his cost of subscription for his life. But, nevertheless, (perhaps because he had got value enough) he discontinued his subscription at the end of that year. Articles on tobacco-culture have indeed been entirely wanting of late—because no more have been written for this work, and no other publication furnishes any on this subject. But, as this work has elicited and published *every* good original article on the subject of tobacco culture, that has appeared in the United States (so far as we

know of) within the last eight years, it surely cannot be condemned, with any justice, because of their small number, compared to other more popular or inviting subjects.

In like manner, especial attention has been paid to the great subjects of cotton culture and cotton interests, in all their branches; and if the articles from, or peculiarly suited to, the cotton planting region, were put together, it would be found that they alone would constitute a considerable portion of our whole work.

So much for denial or apology. But there is another and more important aspect in which this subject should be viewed. Suppose that any of these charges of particular deficiencies were true to the fullest extent, while on other grounds the Farmers' Register had the general good reputation and extensive circulation which it has always enjoyed—we ask whose would be the fault, and and who else could easily furnish the remedy, but the very class who suffered by and would complain of that deficiency? Suppose, for example, that the subjects of grass, and grazing, and cattle, had in truth been as much neglected in this work as some persons have erroneously inferred—the only possible cause of the omission would be that the farmers engaged in and best informed on those departments had altogether failed to communicate any thing thereon for publication. No conductor of an agricultural journal can furnish much practical instruction from his own store of experience; no such promise was ever held out by us, and to have held it out would have been both presumptuous and manifestly deceptive. The great and all-important purpose of an agricultural journal is to serve as a common channel of inter-communication among all its readers—a receptacle and place of deposit of the views, information and experimental knowledge of all—and a source of diffusing, to all, the thus collected knowledge of every individual among thousands thus combined for the benefit of all. Considered merely in this humble and simple mode of working, and how great, how incalculably beneficial would be the improving and profitable results of an agricultural journal so conducted! Such was the main object for which ours was commenced, and, so far as depended on us, that object has always been most especially sought. Always desiring and inviting written communications, and especially of practical operations and results, we have never refused a place to so much as a single article of that character, presenting facts derived from practice and experience. If then, any particular branch of husbandry is not sufficiently treated of, it is entirely owing to the failure of those who possess some information thereon and desire to obtain more, to

present their separate contributions—the accumulation of all which would at once furnish a rich fund, and which, by inducing further experiments and continued communication, would grow more fruitful and profitable with the progress of the work. Thus if the members of any one interest only were so to avail themselves of the facilities offered to all by the *Farmers' Register*, it would, thereby be made more peculiarly *their own publication*; and, by embracing other subjects, would be even more valuable for that particular interest, than if all other agricultural subjects were jealously excluded. Thus it depends entirely on the members of any particular branch of agricultural pursuits, whether the *Farmers' Register* shall become, in effect, their own peculiar organ, and a perfect and rich source of information in regard to all that they most need to be instructed upon. And if the members of not only one, but of all the different branches of agricultural practice, were to do the same, there would be room for all in our broad pages, and each would be amply served and provided for, without lessening the fullest needed supply to all others. The corn, wheat and oat culture—tobacco culture—the new marling and clover husbandry—cattle, meadows and grazing—the great cotton culture of the south—rice culture—sugar culture—and each of all other departments would have ample scope, and receive as much attention, as if each one were the sole subject of consideration.

But if our view in this respect be deemed wrong, and the opposite, against which we have been contending, altogether correct, let us see to what result the latter will necessarily lead. If, as conveyed by the objections above stated, a particular agricultural region cannot be properly served by any journal unless it be published in, and exclusively belong to that region—then every such separate region or agricultural interest, should have its own separate and exclusive publication; or otherwise, that any other publication will much less ably and efficiently serve as an organ of communication and instruction. Upon this ground, there would be at least four separate agricultural publications (perhaps five or six) required for Virginia alone, which has not yet given support to one—and ten or twelve would be needed for the states between the Potomac and the southern limits of Georgia and Alabama. Now if so many papers were but to divide amongst them the present support, pecuniary and literary, given to the previously existing publications, all of them would soon starve, and die, for want of sufficient aliment of both kinds. And even if continuing to live, and operate, each one, if aided only by its own region, would be so meager and uninteresting,

that its lingering existence would be of little benefit to the public, or profit to its conductor.

Should so desirable and valuable a result ever be produced in the southern states as that the subscribers, readers, and writers for agricultural journals should be increased ten or twenty fold, then there will be advantage in increasing greatly the number of such publications. But until that most beneficial state of things be somewhat approached, or appear in distant prospect, it will be far better from the interest of all parties concerned, the payers for and readers, as well as the publishers and sellers of publications, and certainly better for the great object of collecting and diffusing agricultural knowledge, that two or three journals shall be supported well, and supplied abundantly with matter, than that a dozen should linger on upon barely enough sustenance to save them from extinction.

#### SKETCHES OF WESTERN NEW YORK.

To the Editor of the *Farmers' Register*.

*Greatfield, Cayuga Co., 10 mo. 12, 1840.*

We have had no frost here yet, though there has been a little at Rochester; and, I understand a severe one further west of the Genesee river. This result, however, is to be considered merely incidental, for I am not aware that the western part of the state is more subject to early autumnal frosts than lands near the Cayuga lake. A cold column of the atmosphere, perhaps, fell on that part, imbibing the warmth of the earth, and reducing the temperature; or they may have had a clear sky with great radiation, while we were curtained in with clouds; or a breeze may have prevailed here, rolling down on the surface the warmer air from above, and counteracting by such mixture the effects of radiation.

The heath clingstone is now ripening; and as the evening is cool, and some danger from frost, we have been taking in a part by way of precaution. The southern\* character of the peach is indicated by its extreme sensibility to frost; and also by its deficiency of flavor when it ripens in a cool atmosphere.

*1 mo. 2, 1841.*

The preceding paragraphs were written some months ago; but a series of unexpected events rendered it inconvenient to pursue the chain of thought that presented at that time; and I now resume it in the hope that some account of our district will not be unacceptable to the readers of the *Farmers' Register*.

The principal defect of our climate is excessive

\* It appears from Boyle's Illustrations that "the peach grows wild in different parts of the Himalayas," and that even another species of it is found in that region; but I have seen no evidence whatever to show that it is a native of Persia, as its specific name (*A. persica*) would imply. This may serve to explain the remarkable circumstance that the peach is not mentioned in the Bible.

moisture, with that depression of temperature that so often accompanies showery weather. Droughts, indeed, sometimes occur; but generally our driest summers are the most productive. This result in great part, however, has been ascribed to the liberal supply of lime in our soil—not the carbonate, as we might have called it, if the 'Essay on Calcareous Manures' had not taught us better.

But an extract from 'Davy's Agricultural Chemistry' may render my meaning plainer: "The sandstone and limestone hills in Derbyshire and North Wales may be easily distinguished at a distance in summer by the different tints of vegetation. The grass on the sandstone hills usually appears brown and burnt up; that on the limestone hills, flourishing and green."

Our state geologists have considered this district as belonging to the transition class; and the rock that occurs in place in this vicinity is Professor H. D. Rogers' Formation VIII., which extends so widely over the United States. It is in this rock that all our parallel lakes, from the Otisco to lake Erie, are situated.

When disintegrated it forms rather an inferior soil; but the soil and subsoil of this neighborhood have been swept from the limestone formation that crops out to the north of us; and thus the land has been ready limed to our hands by a convulsion of nature. In many places, however, addition would be found useful and profitable for the farmer.

This soft and crumbling slate appears to have been deeply and irregularly channeled previous to the deposition of the diluvial formation. This is evident from the wells which are dug. The slate itself, so far as I have been able to observe, yields no water; and all that the wells receive, is collected above the solid rock. In some places, the rock is near to the surface; and the only advantage of cutting into it is to make a reservoir. In other places it is at unknown depths, covered up by diluvium; and then a permanent supply of water may be obtained. Two wells within half a mile of this spot, are nearly fifty feet deep, without touching the rock, and the water is abundant.

On account of the smoothness of the surface, as well as the impenetrable nature of this rock to water, very few springs break forth in this neighborhood; and the prospect of forming Artesian wells is decidedly unfavorable.

The surface of the country in general is so smooth that travellers in passing from the village of Aurora, eastward four miles, to Poplar ridge, are seldom aware of the height they have gained. One gentleman thought the land was too level to be salubrious, and estimated the elevation of that ridge above the lake at one hundred and twenty feet; yet it is known to be six hundred and seventy by an actual admeasurement made at my request.

The general dip of the rocky strata is to the south. In the disturbances which happened when the basins of our lakes were cleared out, the slate, from its softness, suffered much more than the limestone, so that the latter rock appears to have regulated the depth of those basins, and now underlays them. The lower end of the Cayuga lake extends about six miles through a limestone district, in which the water is probably not more than thirty feet deep. The comparative shallowness of Lake Erie is also ascribed to the same

limestone formation, but Lake Ontario was formed in the red shale that underlays the limestone.

In sailing up the Cayuga lake, however, as soon as we pass the limestone, and the slate appears on the shore, it deepens rapidly, so that the eye in calm sunshine is no longer able to discern the bottom. Opposite to Aurora, the greatest depth was found to be two hundred and eighty-two feet; but I have no doubt of its being much deeper further up the lake. At Aurora the width is more than three miles.

It is rather rarely that the lake freezes over at this place, although we have known several instances of the kind—only once, however, when the ice was strong enough for persons to pass over to the opposite shore. It is well known that shallow water freezes over much sooner than deep water; and this remark applies to all our lakes. The shallow part of the Cayuga lake is frozen over every winter.

This lake appears to have once extended ten miles further to the north, of variable width, encroached on by islands, and averaging perhaps nearly two miles. This tract is now one vast bed of marl of unknown depth. A kind of fresh water snail, (perhaps a *Lymnaea*), which may now inhabit the lake, as its shells are found on the shore, continued to increase till the exuviae approached the surface of the water, and marsh plants began to grow. Other shells, however, probably form a part of this immense mass, which might supply a large portion of the district with marl for ages to come. The posts which support the Cayuga bridge—one mile up the lake and one mile in length across it,—were driven into this deposit, which is so pure that our first settlers used it for white washing.

I have mentioned that we are not indebted to the rock that underlays us for our soils, but to the country north. The flood that once swept over this land, came from that direction, and brought in its train, not only portions of all the rocky strata that crop out on this side of Lake Ontario, but many primitive rocks from the elevated lands beyond its northern shore in Upper Canada. Whether they *forded* or *navigated* that water, may be a question for the curious; but no doubt can exist of their arrival from that quarter. All the whole diluvial formation was southward in its course.

Most of these stones or rocks, which are scattered over all our fields, are rounded, though this is in some measure proportional to the distances they have travelled,—those of this district not more than a furlong or so, south of their old beds, retaining their angles.

The difference in the size of these fragments, is sometimes very great. I estimated one piece of granite near Montezuma at 3000 cubic feet, and it appeared to rest on a bed of sand.

The course of this deluge was upon an inclined plane, rising over the highest hills, and passing into the valley of the Susquehanna. That river at Owego is 410 feet higher than the Cayuga lake; and the lowest opening in the hills between them is 594 feet; yet fragments of our rocks have passed into Pennsylvania, though much worn and reduced in size. In early times, the gravel along the shores of that river was picked over, and limestone pebbles collected in sufficient quantities to burn into lime for domestic purposes. These were not found, however, more than twenty miles down

the river, as if they had become worn out by contrition on so long a journey.

Some parts of this district appear to have suffered a more violent diluvial action than other parts, though it is possible the evidences may be more owing to a greater quantity of loose materials in some places; which would be more obedient to its power. This latter suggestion finds some countenance in the circumstance that gravel hills occur in greater abundance south of Lake Ontario, than in any other part of western New York; and this tract extends to the distance of more than twenty miles from the shore. Such a lake is the place where we should expect loose materials to collect.

The arrangement of these gravel hills presents the most curious phenomena. Their direction varies from the true meridian in some cases more than twenty degrees to the west of north; but those which I have examined in the neighborhood of Montezuma, diverge much less, and vary but little from the present magnetic meridian; of course they are nearly parallel; and I have not found any two adjoining ridges to differ more than two degrees. They point to a common centre at the north.

Perhaps I may be better understood if I briefly describe them. Some are more than half a mile long, almost as regular as an artificial embankment, and broad enough for public roads, which in some instances have been laid out along them; while others, indicating a more violent action, are shorter, composed in part of coarser materials, including rocks, and so narrow on the top as barely to admit of a foot-path. It seems evident that, when they were first formed, the edge must have been as sharp as the ridge of a roof—as sharp as loose materials could be made to stand.

Some of these ridges may be 100 feet high; an altitude from 40 to 70 feet however would include a great number. They add much to the picturesque beauty of the country; but little to the comfort of the farmer, as they divide his land in some places most inconveniently.

In three or four wells within half a mile of this place, branches of trees have been found at depths of more than thirty feet. The wood is sound, resembling red cedar, and I have preserved some of those specimens in my cabinet.

In the waters of the Cayuga, eels are numerous; and in autumn great quantities have been taken in baskets when descending the Seneca river. Only a part however migrate at that season. In winter, holes are cut in the ice which covers the lower part of the lake, and barrels of them have been annually caught with spears.

Ice is more rapidly formed on the lake when the water has been chilled by deep snows, or a long continuance of cold weather. Thus a severe night towards the close of winter, produces a much greater quantity of ice than a night of equal severity in the earlier part of the season.

When the thermometer is below zero, the lake smokes like a great caldron; and much latent heat is given off with these exhalations, softening the air to a considerable distance. In this way the climate of the lake country is milder than that of any other inland district within the same parallels of latitude east of the Rocky Mountains. The mercury at this place, so far as I have been able to learn, has never been so low as it has

been *sometimes* at Philadelphia, Cincinnati, and Vincennes.

North-easters, always so uncomfortable and often so destructive in the maritime parts of the United States, are not felt in this district; and no wind sets in regularly from that quarter at any time. I remember, indeed, a brisk wind with snow for half an hour or so, but this was in unsettled weather, when light breezes were veering round from the north towards the east or south-east; and I have no recollection of any similar instance.

I have ascertained that at times when north-easters rage on the coast, we have at this place a light steady breeze, varying from N. N. W. to N. by E.—more frequently with rain or snow, though sometimes with a clear sky. It seems as if a portion of that *great under-current* came up the St. Lawrence, and then was deflected over this favored land,—for the breeze is so gentle that probably no person in health would think of postponing on its account a visit for either business or pleasure.

Northerly winds, as I have already mentioned, are not generally fair weather winds; and several of our deepest snows have come from that quarter. I have seen showers from that direction for two days in succession, which it appeared were exhausted, soon after passing into Pennsylvania, as a newspaper printed at Williamsport, on the west branch of the Susquehanna, a day or two after, noticed a continuance of the drought while we were saturated.

When the S. S. E. wind sets in, taking the direction of the upper part of the lake, not unfrequently a hazy cloud, the thin edge of the coming tempest, is seen at the same time in the S. W. just rising above the horizon; and from this it is evident that our south-south-easter is really a S. W. wind deflected from its course. In winter it is the most chilling wind that blows, flowing down from the mountains in the south; and sometimes it is 8 or 10 hours before it becomes sensibly warmer. If the storm approaches while the air is cold, we have snow; but if the wind has time to soften, we have rain, or snow melting as it falls. It is not uncommon for snow to fall from that quarter three or four inches deep, followed by a thaw, and succeeded by snow squalls from the west.

Sometimes the S. S. E. wind blows moderately for several days, especially in summer or the early part of autumn, without rain; but though often warm and pleasant, it is considered the precursor of a storm; and no settled weather is expected. In drought, however, whether of long or short duration, the wind generally comes *down* the lake in the morning, but *up* in the afternoon. It is a revolution without a cloud—an unsuccessful movement in the air to raise a storm.

Thunder clouds commonly approach from the S. W. but appear over the highlands south of the lake more frequently than in any other quarter; and often when we have a clear sky. Such attraction is well known to meteorologists. Showers, however, very seldom approach from the north-west; and so extremely rare is a thunder-storm from the east, that a farmer considered one of last season as "backing up."

I have spoken of the influence of our lakes on the temperature, but they have other effects. In

cool weather, the atmosphere is often loaded with clouds for many days in succession, evidently the condensed vapor from those wide spreading waters; and so much of such weather have we in winter, that icicles from our roofs are very rare objects. I doubt, however, if those canopies extend much more than a hundred miles into the country. They are often dense enough to "spit snow;" but rarely, though sometimes, sprinkle in summer.

Clouds prevent the radiation of heat into the open sky, and tend to equalize the temperature between night and day. Indeed, under such a covering, the night in winter is often as pleasant as the day. By excluding sunshine, clouds also preserve the snow for sleighing, and for the protection of grass and winter grain, as no heat radiates through water in any of its forms. Formerly there were instances of young horses subsisting well through the winter on the grass they found under the snow.

In sleighing time and cloudy weather, the Cayuga lake where unfrozen is pictured on the clouds, dark, and resembling an approaching shower; yet there it remains through the day. A lurid streak at a lower angle represents the Seneca lake. These appearances are occasioned by the dark waters ruffled by the wind, reflecting less light than the snow.

Fogs are extremely rare in this neighborhood. During a residence of more than thirty years, I have never seen that vapor rise from the ground but once. Sometimes, however, it is driven by the wind from the lake; and sometimes, after a long rain or a thaw, when the air is surcharged with moisture, it is condensed by the wind freshening up from the westward. But I have already extended these sketches beyond my original design.

D. T.

#### REPORTING EXPERIMENTS WITH ARTIFICIAL MANURES.

From the British Farmers' Magazine.

In all our agricultural publications now issuing from the press we see many accounts of experiments made for ascertaining the value of certain substances recommended as manures either for top-dressing or ploughing in. Some of these accounts are elaborately and no doubt faithfully written; and sometimes favorable, or, as it may happen, unfavorable. Sometimes, too, we are told of the same material having a contrary effect on land of precisely the same character, especially if situated in distant parts of the kingdom. Now the discrepancies may often arise from ignorance, want of consideration of the peculiar effect or action of the material employed.

Besides the various substances which have been used for manures from time immemorial, there are others chiefly minerals which are brought into use with various success. The reports of such trials are not always uniform, and defective in so far as the character of the weather or season following the application is omitted to be stated. In my own practices I have used soot extensively for top-dressing wheat, and have harrowed and rolled it in; but if a dry spring and summer followed the soot was of no service. I have used

chalk and lime as dressing for light gravelly land; but if a wet season succeeded little or no immediate effect was observable. The same result followed the application of salt, on the same description of land under the like circumstances of season. The reason for the non-efficiency of these three last named substances was perfectly obvious: all three are ready absorbents of water from the air, and in a dry season are eminently useful to growing crops; whereas, in a showery time, the crops need no such assistance.

Salt-petre and nitrate of soda are at present fashionable top-dressing; and those best acquainted with those substances affirm that they are often injudiciously used. On wet tenacious land they never can be so efficacious as on dry sandy or gravelly soils; nor in wet seasons so much as they certainly must be in dry. If I be not mistaken in attributing to them such effects they will always be considered as doubtful fertilizers; because they must be used before it can be ascertained, except by conjecture, what sort of season is to follow.

Mr. Cuthbert Johnson observes that "the agricultural uses of salt-petre have not been examined so carefully or generally as they ought to have been;" and G. Kimberly, Esq. of Trotsworth, "regrets that it has been hastily adopted without references in many cases to season, soil, or quantity, and as a few fortunate experiments have started into a fashion the use of those articles, so one or two unseasonable or improper applications have at once condemned them to neglect and oblivion."

Such reports show decidedly how necessary it is to know correctly the effects of those artificial manures; whether as the food of plants or improvers of the staple; whether as exciters of vegetation or solvents of nutritive matters already in the soil; and also under what circumstances of weather or season they are most active or altogether neutral. These are questions for the agricultural chemist to prosecute; so that no farmer need work on this twilight or be in doubt concerning the direct effects of any manure which comes recommended from competent authorities.

And in all future reports of experiments made with any of those uncommon articles of manure, the reporter should not omit to state what kind of weather has prevailed during the experiments; for the effects, especially of saline substances, are very much determined by the state of the weather.

J. MAIN.

[Our respected correspondent is right. Much of the success or otherwise of these and many other manures we could name must depend on peculiar circumstances of soil and season. We have heard salt-petre abused one year and highly extolled in the other; although tried on the same soil, the same description of crop, and by the same person.—ED.]

#### HAY SEED AMONG CORN.

From the New England Farmer.

We saw an article in one of the southern papers a few weeks since, mentioning that some one, we think in the middle states, had sown clover seed among his corn; and the inquiry was added,



"whether any one at the north or east had tried it?" In reply, we would inform the inquirer that Hon. Wm. Clark, of Northampton, Mass., has for many years been accustomed to lay down his light lands to grass in this way. His communications upon the subject led to the trial of this process upon the farm where we have earned our bread. And we are disposed to recommend a trial of this method. Our belief, founded upon the observation of results in four different seasons, is that the seed will be less likely to fail in this way than when sowed among grain; that the first crop is much more free from weeds; is entirely free from dead grain stalks; is easier to mow; is equally abundant; and better in quality. We think also that grass lay thus made holds out better than others. By this process the young grasses are exempted from the baneful influences of the overshadowing grains, and from the withering heat to which they are exposed when the grains are removed. They are saved from the stinting to which they are usually subjected.

*The process.*—Spread all the manure; make *no hill*; and at the last time of hoeing, say the middle of July, sow the grass seed among the corn; pass through with the horse-harrow or cultivator, (simple harrow teeth are best,) then hoe, making all smooth, and the work is done. At the proper time cut the corn as near the ground as can conveniently be done. Should the grass do well, the stubs would probably soften so much as to offer very little obstruction to the scythe. But if one be fearful that it might be otherwise, he may take, as is our custom, an old adze or a strong and heavy hoe, and go over the field while the ground is frozen and by a single blow at each hill pare all smooth. An acre may be gone over by an active boy in three or four hours. After the frost is out, let the ground be rolled. In the early part of the season, appearances will be unpromising for a crop; but about the middle of June it will come forward rapidly, and about the 10th or 15th of July will be fit to cut. Land, we suppose, can be laid down as smooth in this way as any other; though we have not heretofore been very particular in this respect, and our grounds, though even enough to work upon without inconvenience, are not made quite as level as when a grain crop is put on.

The last season we took up grass land in the spring; planted to corn, and in July seeded down to grass.

We do not advise any beginners to make extensive experiments, but we do think it will be found good husbandry to adopt this process to a considerable extent on many farms.

#### BEETS FOR CATTLE.

From a Western Paper.

As experience, and not speculation, is what farmers need, I will give my observations in feeding beets to my cows during the two past winters. In 1838, I put up about 300 bushels of mangel wurtzel beets, 100 bushels of turnips, and some potatoes, for the purpose of experimenting in feeding my cattle through the winter. I knew nothing but what I learned from books, as I was acquainted with no farmers, (nor am I yet) who fed with

roots. At first I was at a loss to know how to feed them, whether in a raw state or cooked, but having determined to try both plans I commenced the work, and each did well. Young animals are peculiarly fond of the raw beets, and thrive astonishingly on them; but for cows that give milk, they are better boiled, particularly if a steamer can be used in the process. Though milk cows should have raw beets once in every two or three days if grass cannot be had.

The turnips and potatoes were given precisely as the beets; but I could not determine that either had the preference over the other, as the cows gave about the same quantity of milk, and their condition did not seem changed by either. In feeding the same animal with beets, it was easily told that one-third less than of the turnips or potatoes would make them give the same quantity of milk, of better quality, and they showed better keep.—The beets made the milk better, the butter better, and the cows look much better. On one half bushel of beets per day to each cow, without straw, and a little meal or bran mixed in, they continued in good condition through the winter, gave as much milk as in the summer, and the butter was full as good as in May. My experience during the past winter (1839—40) while I fed on roots, only confirmed my former conclusions.

#### CABBAGE AS FOOD FOR HOGS.

From the Farmers' Cabinet.

A gentleman remarked, in our hearing, a few days since, that cabbage was a valuable food for hogs. The idea was new to us, and we inquired the manner of feeding. In reply, he gave the following as the result of his experience, the last summer. Having a fine patch of plants, and observing the bottom leaves beginning to decay, he directed his farmer to procure a water-tight cask, and gather a bushel of the lower leaves from the cabbage plants and deposit them in the barrel, with a handful of salt, and one quart of corn meal. On this was poured the contents of the kitchen swill pail, and the whole was suffered to stand undisturbed for twenty-four hours, when the process was repeated, with the exception of the salt—and so every day until the cask was filled with a mass of wilted leaves, about six quarts of meal, potato peelings, crumbs of bread, &c., from the kitchen; all in a state of partial fermentation. He now commenced feeding it to the hogs, and they eat with greediness, leaving other food for this. They were evidently as fond of this kind of mush, as ever "Mynheer" was of *sour-kraut*.

While the hogs were consuming the contents of the first barrel, a second was in course of being filled, and so alternately, till the stock of leaves was exhausted.

This gentleman gave his opinion, that he could not have prepared any other kind of food for his hogs, at double the expense, that would have produced results so decidedly beneficial. An increase of appetite, improvement in their general appearance, and better heart, was the result of this method. The cabbage, he thinks, were greatly improved by plucking the redundant fo-

liage; and he intends to plant a large patch of cabbages, the coming season, more fully to test the advantages of this kind of feed for hogs. We invite him, and others who may "experiment" in the business, to give us the result for publication.

#### ENGLISH MINES AND MINING.

From the English correspondent of the N. Y. American.

Newcastle-upon-Tyne, August, 1840.

That man must be insane who should write a letter at Newcastle-upon-Tyne, about any thing but coal. He has but one idea—coal! One thing fills his vision—coal! Coal is the standard of value, and coal dust the circulating medium. The houses are built of coal. The streets are paved with coal. The inhabitants live on coal. The children look as if they were made of coal, and even the white clouds are black!

What a wonderful region is Durham and Northumberland shires? The whole country is undermined. Buildings are erected 700 and 800 feet below the surface of the earth, and streets and railways running for miles in all directions, are daily traversed by thousands of human beings. Newcastle, with its population of 60,000, stands on the *crust* of a subterranean city. Some of its houses have sunk their foundations in consequence of the yielding of the ground beneath. The River Tyne, as large as the Thames at London, floats its commerce over these vast caverns; while at Sunderland and other places on the coast, the ocean rolls its waves over the heads of the miners. The chief wealth of Durham and Northumberland lies hid in the bowels of the earth where a very considerable portion of the inhabitants pass half their time. The coal-pits open their black mouths on every hill and in every valley. They may be distinguished far off by the towering enginery erected over them employed in raising the coal and water from the depths below, and the piles of the former which lie around in hillocks waiting to be transported to market. The country is lined with railways—more abundant than hedgerows—used in "carrying coals to Newcastle." At every half mile, you meet with the little villages of the pitmen (as the laborers are called.) The snug brick cottages are arranged with regularity and taste—each having its *petit* grass-plot in front, usually decked with flowers, and its vegetable garden and fruit trees in the rear. What a contrast between these smiling though humble abodes, and the dismal caverns where the villagers spend nearly their whole conscious existence!

Great labor and expense attends the sinking of the shaft of a coal mine. The exact location of the strata must be ascertained by boring before the excavation commences. This determined, you know not what obstacles you may encounter from veins of rocks or streams of water in your descent. And, then, the destruction of human life almost invariably in these perilous enterprises! the gigantic nature of which may be inferred from the fact that the shafts are generally sunk to the depth of 600 or 700 feet, and sometimes to 1200!

#### TWO GOOD FARMERS.

From the New Genesee Farmer.

Not too good farmers—for those that are merely good, are almost as rare as white blackbirds. When we say "good," we do not mean what is commonly understood,—industrious, money-making men,—but who perhaps apply a large portion of their labor to very bad advantage; but those whose whole course, in all its departments, is such as accurate and repeated experiments have proved best adapted to the soil and climate; which not only affords the greatest profit each year, but is constantly improving instead of exhausting the land.

These two specimens are given in the late report of the Farm committee of the Harford County Agricultural Society, published in the New England Farmer. The first is that of John B. Davis, of Derby, whose farm consists of seventy-five acres, and from which the following very respectable average annual receipts are derived.

Apples and Cider,	-	-	-	\$500
Hay,	-	-	-	200
Potatoes,	-	-	-	100
Pork,	-	-	-	80
Sheep,	-	-	-	75
Grain,	-	-	-	75
Wool,	-	-	-	25

Two men labor on the farm the year through, with occasional additional help, but no precise account of the amount expended was rendered.

It will be seen that the orchard is the most profitable, the trees being kept in the finest condition, to which frequent tillage doubtless contributes. Five hundred dollars were received last year (1839) for winter apples of the choicest varieties, and forty dollars for cider sold, besides thirty barrels kept [for what purpose?] and apples fed to hogs, cattle, and horse. All the farm, except the woodland, has been subjected to the plough, although hay is the chief object aimed at in cultivation. Only small portions of the land are tilled, on which the cultivated grasses have become less luxuriant. The routine of crops adopted is, 1st, corn on sward with manure; 2d, potatoes with manure (sometimes followed by turnips); 3d, rye or oats or grass seed. For the corn, (which is Dutton and white flint,) twenty double loads of manure are spread on the grass before ploughing, and afterwards holes dug at each hill in which a small handful of plaster and ashes is dropped and mixed with the soil at planting. The average crop is seventy bushels an acre. The potatoes are planted with equal manuring, and yield two hundred bushels. The rye yields twenty-five, and the oats seventy bushels, two and a half bushels of the latter being sown to the acre, which is ploughed in, harrowed, and the grass seed covered with a bush.

About twenty acres are kept in meadow, which continue in grass from six to eight years, and the average crop is estimated at two and a half tons to the acre.

Of manure, seventy-five loads are made yearly, and fifty purchased; one ton of plaster, half a ton of shell lime, (which is added, as indispensable, to the compost,) and fifty bushels of ashes are also used.

The stock consists of two yokes of oxen, two milch cows, seven hogs, thirty-five Bakewell sheep, and one horse.

The other farm is that of Wm. K. Townsend, of East Haven, on New Haven harbor, and consists of 43 acres of salt grass, and 118 acres of upland. The report of this farm, by the committee, we have read with great satisfaction, and, did our limits admit, we should be glad to give it entire. Such a report, mere matters of fact statement as it is, is more calculated to inspire a taste for farming, than all the fine declamation and eloquent reasoning we ever heard or read. As it is, we must content ourselves with a statement of some of the most interesting facts.

The buildings are arranged with a strict regard to convenience, being erected "after approved models, and they show conclusively that much labor may be saved by judicious arrangements, with but trifling additional expense. For each implement of husbandry, a special and convenient place of deposit is also provided." The fences throughout are good. The soil is sandy and gravelly loam, naturally light and thin, and left in wretched condition by its former occupant. Successive portions have been reclaimed from this condition, by careful and thorough tillage, collecting the stones into strong and durable fences, and applying a heavy coating of manure. With the exception of two fields, which have not thus been reached in the regular order, the farm has been greatly improved. "After such improvement, however," say the committee, "these lands are not, as is too often the case, again reduced to their former condition, or rendered still less productive, by injudicious and excessive croppings, without any return to the soil; but by such subsequent careful treatment, as every good farmer ought to give his land, they are kept constantly improving."

The corn crop, by measurement, has averaged seventy bushels the acre; potatoes, two hundred and fifty bushels; rye, twenty-five bushels; oats (rarely raised,) forty-five bushels; and barley, thirty-two bushels. Great crops of pumpkins are also obtained, by planting in large manured hills ten feet apart each way, six or eight seeds, the two most vigorous shoots being allowed to remain.

Three hundred double loads of manure are annually made on the farm, of which more than fifty are from the hog-pen. It is always applied unfermented, except to meadows and root crops, where compost is used. Three-fourths of a ton of plaster are yearly spread upon the meadows and pastures, and fifty bushels of shell lime applied to the compost heap.

Great profit has been derived from the breeding of improved stock, consisting of Durham cattle, "Thin Rind" hogs, and Bakewell sheep. The use of the revolving horse-rake in securing hay, of the cutting box for feeding stock, and of stables for cattle in winter, has effected a great saving.

Accurate and regular accounts of all operations are constantly kept, from which the following statement is taken of cash received the past year, over and above the consumption of a large family:

Fruit,	-	-	-	\$ 200
Vegetables,	-	-	-	50
Neat stock,	-	-	-	1,310
Hogs and pigs,	-	-	-	585
Wool,	-	-	-	50

Milk, butter, and calves,	-	-	-	2,143
Rent of stock,	-	-	-	50

Gross income in 1839,	-	-	-	4,388
Deduct cash paid for labor and feed of cows,	-	-	-	1,452

Net income in 1839, - - - \$2,936

The great profit thus secured, appears to have resulted from the establishment of a well digested system of farming, faithfully and energetically carried out, and from the guiding of all the operations by constant and accurate accounts.

#### HOGS—MODE OF FEEDING.

From the Boston Cultivator.

Wm. Buckminster, esq.,—Sir: I send you an account of some hogs I killed this fall, and the manner of keeping, which you can publish if you think deserving a place in your valuable paper.

I killed two hogs, one sow, and six pigs, which the sow raised; their weights were:

One Hog,	631 lbs.
" "	566
" Sow,	509
Six pigs,	1200

making 2909 lbs.

They have eat 250 bushels corn, at 60c—\$150.  
" " 200 " vegetables, 30c—210.

My manner of feeding them was as follows: From the 1st day of September to the 1st day of March, their breakfast was raw potatoes, their dinner raw turnips, beets or carrots; their supper one quart of corn each. The 1st day of March I filled their trough with corn and water, and kept it so until the day I killed them. I have a warm place for them to sleep in, and a yard where I make my manure, 36 by 20 ft. with a stone bottom, and have now in it, which I have made this summer, 125 horse loads; I care not what the breed of a hog is if they will eat well, and we do our part, and give them plenty of corn. Six years ago I bought 20 pigs, and sold to my neighbors all that were saleable, and they told me I had better knock the brains out of the rest of them and save their keeping, but I raised as large hogs as any of them; I kept the breed during the time, only shifting the sows twice in six years. Last year I killed 3 hogs weighing 1600 lbs.

BENJAMIN SMITH.

Duxbury, Ms. Dec. 13, 1840.

Our friend of Duxbury does not seem to think highly of cooking food for hogs; but many accurate experiments have been made which show the advantage of cooking it. No doubt many of these are exaggerated. Horses will work quite well on corn, provided always they have time enough to chew and digest it. It should always be given them in the evening when they have time for both.

Hogs need a change of food, and whole corn may take its turn in the change—but we must think that well cooked food is in general far superior to that which is half cooked. To prove this we have need only to compare heavy bread to that which is made in the best manner.

There is a difference also in breeds of animals, in regard to the quantity of food necessary to fatten them. We want small bones, small heads, and broak backs, for swine. Do we not see that some men eat more than twice as much as others, and yet are more lean than they?

In improving the breeds of animals we are liable to one general error,—we make pets of the selected stock and the animals are soon overgrown. We gain nothing by rearing very large horses, oxen, cows, or hogs. Our main object should be to improve their proportions. Ed. B. C.

#### FIRST EXPERIMENT IN BEET CULTURE—MANAGEMENT OF HOGS.

For the Farmers' Register.

About the middle of April last, I was presented, by the editor of the Farmers' Register, with about two pounds of sugar beet seed, which had been sent him with a number of other seed, for gratuitous distribution, by that public-spirited and enterprising individual, Mr. James Ronaldson, of Philadelphia. Being anxious, though unprepared, to make a small experiment in root culture, I accepted the seed, and bought at the same time two pounds of mangel wurtzel seed, which I determined also to plant. The season being well advanced, and all the land which had been prepared during the winter having been either planted in corn or sown in oats, I deemed it entirely too late to plough any grass or sward land for roots, and was at some loss to know what to do with the seed. I at last determined to take a piece of ground which was planted in multicaulis the preceding year, and which was left in a very clean state. Previously to the multicaulis crop, this land, a light sandy loam, would have produced not more than 25 bushels of corn to the acre, and after that crop I think much less, as I conceive the multicaulis to be a great exhauster. Under these circumstances, some of my friends prophesied that my land was entirely too thin for roots, and that planted in beets it would bring nothing. I was, however, not deterred from the trial, as I conceived it the best I could do.

I first ploughed the land seven or eight inches deep. Spread over it a heavy dressing of unfertilized farm pen manure, mixed with some stable and also some hog pen manure. The manure, though I picked for the finest the pen would yield, was still very coarse; and would have been pronounced entirely too much so for root culture. I again ploughed to cover the manure and laid off my rows with a marker three feet apart. The land was well pulverized by the second ploughing, and the manure well incorporated with the soil. Some of the rows were ridged before marking off; but in the result I cannot perceive that the ridging was at all beneficial. On the 14th of April I planted the seed, after soaking them from twelve to forty-eight hours. Those soaked longest came up quickest and best. I am inclined to think they would not be injured by soaking seventy-two hours, and would prefer that time to any less than forty-eight. The seeds after soaking were rolled in a little dry slaked lime, merely to enable the planters to handle them more readily. They were then dropped by hand, for I had no drilling ma-

chine, two to four seeds in the row, at intervals from six to eight inches.

On the 10th of May the beets began to show very prettily throughout the whole row. On the 21st of same month thinned to six or eight inches apart, and set out in missing places, the day being rainy. A few days afterwards the first hoe weeding given. First day of June the first ploughing was given, and I thought the beets promised badly. A second weeding was given on the 23d June, and by the middle of July they looked very promising. This was all the work given them, viz., one ploughing with the common trowel hoe plough, and two hoe weedings. I did intend giving another ploughing, and the land was foul enough to demand it, but on attempting it the tops of the beets were so flourishing, and at the same time so brittle, that the horse did more damage by breaking them off than I conceived he did good. On the 10th of August the beets seemed to me to have reached their prime, and I commenced boiling them for my hogs. On the above land, and with the above labor, (land and labor both insufficient for a first rate crop of corn) I have made a very pretty crop of beets, the stand being pretty good, and many of the roots weighing twelve pounds. I do not wish, in giving the details of my own trial, to be understood as advocating poor land and little work for beet culture; but only to show how easy and sure the culture is; and how very successful it would be in good land and with good culture. On no account would I hereafter be without my patch of beets.

I also sowed a pound or two of carrot seed, under exactly the same circumstances, and in the same land, but the return was very far inferior to the beets. I have no hesitation in saying that the beets yielded more food for my hogs than any thing else I could have put on the same land.

I also for the first time tried the ruta baga. One patch, sowed July 10, previously cow-penned, deeply ploughed and heavily dressed with ashes and scrapings from the negro quarters, did well. The stand was good and roots large. I am satisfied they would have done better had I sown earlier, say June 28th. Another patch sown a very few days after the first produced nothing. A dry spell happened to come on and the seed were a long time vegetating, and, when they did come up, the young plants were all destroyed by the fly.

In common with many of my neighbors I am trying to throw off the heavy burthen of annual tax which we have been so long paying to our western farmers for pork and beef, and am now attempting to raise my hogs by grazing and sty-feeding. I have an undoubted grazing breed, and the only difficulty I have had is the frequent injuries done to the hogs by the little negroes attending them. My plan, or rather the plan I aim at, is to have my pigs born twice a year, viz., the first litter about the first of March, and the second about the first of September. In the latter case my object is for such growth to be attained by the pigs before winter as will enable them to stand the cold. Pigs of both litters are killed the following December 12 months, being respectively 15 and 20 months old. The pigs of the fall litters I find do not stand being kept in sties during the following winter. I have constructed a small wood range for them, inclosing a running stream of water. In this lot they pass the winter, being confined

every night in warm and comfortable pens at the house of my hog-minder. All my other hogs, viz.: sows and store pigs of the springs litters are kept in sties at the farm-yard. Their pens are regularly littered and cleaned out once a week. I litter with leaves from the woods when I can get them dry, and with straw, when I cannot.

As to food, I aim at the following plan. As soon as the clover is sufficiently started I turn all my hogs in it. They remain on the clover till wheat is cut. They then glean the wheat and oat fields until all the grain is well picked up. My hogs never fail to improve very fast on the clover and wheat fields. By the time the wheat and oat fields are well gleaned, cimblins will be ready for them. Cimblins will last till pumpkins come to hand. At the same time that pumpkins are ready, beets may also be boiled and will make a most excellent wash mixed with a little bran or hominy. Wash made of beets, carrots, parsnip and ruta-baga, together with a little grain, such as tail-ends from wheat and short (or "refuse") corn, I look to for carrying them up to clover time again. My fattening hogs I feed liberally with short corn for 4 weeks before killing, if I have it, and if not, with good corn. This year I have fattened 6000 wt. of pork without resorting to good corn.

If the above crude remarks induce a single farmer to make a crop of roots, I shall be more than compensated for the short time they occupied.

A LOWLANDER.

#### MANURES AND THEIR APPLICATION.

From the Boston Cultivator.

Flesh of all kinds is strong and valuable manure—it operates rapidly when buried in the field, and in the compost heap it contributes more richness than almost any substance which we are in the habit of using. All kinds of oil, fat, blood and offal of animals are exceedingly powerful, and none of these should be lost. At this season of the year, when farmers kill their hogs and cattle, this offal, &c. should all be covered in the compost heap. Hogs' bristles, hair, tanners' waste, and shavings may often be collected in great quantities.

Fish were formerly used in many places near the seacoast for manure, but the practice is now discontinued—two alewives were placed in a corn or a potato hill, and nothing else was applied. In a course of years it was discovered that this manuring impoverished the soil, and some thought it brought a curse upon it on account of the misapplication of what was providentially intended for food.

The truth is, a small mass of manure of any kind put in the hill only, for the raising of exhausting crops, will impoverish all kinds of soil, for it creates a greater draft in the roots where it is applied, and shoots them out in search of food in places not artificially supplied with enriching matter—a rank growth of stalks in the hill requiring more to nourish them than a small growth. Had these fish been put in the compost heap and then spread over the ground and covered, the effect would have been different.

We see the powerful effect of matters of an

oily nature when we witness the operation of wool waste on grass lands. No animal manure, or excrement of animals, is known to be half equal to it. It is true some animal manure is usually found in wool waste, but the extraordinary effects of this manure must be principally owing to the animal oil in the wool. Large quantities of this matter may be found at woollen and carpet factories, and farmers who can will do well to procure it at considerable cost. It should always be put into the compost heap and mixed with sand or loam before it is carted on to the mowing land.

*Horse stable manure.*—We rank this next to oil, fat flesh of different kinds, and offal. No manure will hold on longer than this, and when it is properly managed there is no difficulty in bringing it to operate early. Yet in many places horse manure is not highly valued. The reason of this is it is either suffered to lie in a heap and to heat too much, turning white like the ashes of walnut wood after all the substance is consumed—or it is suffered to lie scattered abroad until its goodness has nearly all evaporated.

We have known many farmers who were very careful to make the most of their hog manure, yet they would have less than two cart loads annually from the horse stable. When this manure is thrown out of the stable it should be immediately mixed with something that requires to be heated. Peat much, soil of almost any kind may be used; these will keep the horse manure from heating too much and washing away. But a still better mode is to keep the horse standing on his manure. This cannot be practised in large tavern stables, but in most private establishments there is no difficulty in it; and both in winter and summer a horse may be kept much more comfortable than in any other manner.

The horse stable should have no floor—and where the ground will admit of it the horse should be kept in the barn cellar, or where he may be partially under ground. Here he is warmer in winter and cooler in summer than when he is wholly above ground; the flies pester him less—they will not trouble him in the least if the stable is darkened, as it may be—without a floor, he stands on his manure, well covered daily with litter—and here his hoofs are never known to crack, and the horse never becomes lame on account of fever in his feet, arising from the dryness of a floor. Here also the horse lies at his ease and rests his bones.

But this is not all—his manure is more than six times as valuable as when he is kept in the common way, for fifteen loads of the best kind may be made each year from a single horse. It is very fashionable to speak of the quantity that may be made from hogs, but many seem not to consider how much may be made from other animals. In this mode only do we save all the urine of the horse; and this contributes to keep the whole from burning; and while the horse stands on it there is no danger of losing its virtues—we can keep it till we want to use it. As soon as we overhaul this heap or throw it out, we must watch it, and not let it heat too much.

## CALVES RUNNING WITH COWS.

A writer in the Farmers' Cabinet says—"My experience extends to many hundred cases, for upon the hills of Scotland it is the universal practice to permit the calves to remain with their dams during the summer, but such are never known or expected to make superior cows for the dairy, and for this reason.

"Depend upon it, to make a deep milker, the bag must be periodically distended, and those who suppose that to allow the calves to remain with their dams through the summer would be to the injury of the cows, have not come to that conclusion without 'reason or evidence.' Besides, does not the writer in a measure admit the possibility of the case, when he thinks it possible that the cows, under such treatment, might grow fat?—as they assuredly will—it is not often that cows, when kept to the pail, are troubled with this inconvenience."

LOTHIAN.

## A COMPARISON OF THE DIFFERENT BREEDS OF SHEEP.

From the Western Farmer and Gardener.

In the western states, where land is, of course, not so valuable as in the east, the Bakewell breed of sheep, although of a more tender constitution than the Southdown and Cotswold, and of coarser and smaller fleece, may be advantageously kept for their wool, notwithstanding its quality is rather coarse; it appears, however, from all the information on this subject, (the comparative value of the breeds of sheep,) that the Southdown and Cotswold, are much hardier, better nurses of their lambs, and require less attention through our winter, and will live on shorter pasture in summer. The Merino and Saxon sheep have often too much the same objection as the Bakewell; they are of rather weakly constitutions, and not very good in rearing their lambs. Some of the Southdown wool is pretty fine and makes good cloth; the mutton is, perhaps, superior to all other kinds, (excepting some of the small Welsh breeds,) their constitutions are very vigorous and strong, and they will make a living in any situation. The Cotswold are equally hardy, but want richer keep than the Southdown, their fleeces weigh heavy, and their quarters have been known to reach 80 pounds in England. Some of the Southdown and Cotswold lambs have weighed, at six months old, 60 pounds, and when full grown 240 pounds. It seems, amongst many other "hard cases" in agricultural efforts for improvement among farmers, very difficult to convince people of the benefit they derive from having good stock. They complain too much of the first cost, without considering that in two or three years there is a fair prospect of not only seeing their money back again, but probably ten times as much more. We do not wish to advise farmers to go beyond their means on much uncertainty, but we do say, that twenty dollars laid out for the best breed of pigs, and fifty to one hundred dollars for sheep, or one hundred to two hundred dollars towards improving their cattle, will, with proper management and attention to the sale of their produce, pay a handsome profit at the end of a few years,

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besides supplying superior articles at cheaper keep (on account of the fattening properties of the best breeds) for domestic use, and enjoyment of both sight and taste. We subjoin, in the first place, a comparative statement of the value of the different breeds of sheep.

Saxon lamb 6 months old, weighing 18 pounds at 6 cents,				\$1 08
Merino lamb	do	do	20	1 20
Bakewell	do	do	30	1 80
Cotswold	do	do	60	3 60
Southdown	do	do	50	3 00

In the second place, their wool

Saxon fleece weighing 3 lbs. at 40 cents			\$1 20
Merino	do	3	31
Bakewell	do	5	20
Cotswold	do	10	25
Southdown	do	5	31

Of course this is rating the best breed of sheep at the price of the common kind, which cannot be for a long time to come. These animals are now worth about twenty dollars each at least.

In the third place we give a comparative statement of the value of sheep when full grown:—

Saxon sheep weighing 50 lbs. at 4 cents			\$2 00
Merino	do	60	4
Bakewell	do	110	4
Southdown	do	240	4

## DOMESTIC ANIMALS—THEIR DISEASES AND FOOD.

For the Farmers' Register.

Reason would say to us that no farmer should be without horses, cows, hogs, and sheep. If the question be asked, which of those animals could, with most propriety, be dispensed with, perhaps it would be differently answered by different persons. Although the horse is very valuable, yet we could use oxen, and dispense with him. Although the hog yields the greater portion of our meat, yet we could dispense with him. Although the cow yields us meat, milk, butter, and leather, yet we could (though illy) dispense with her. Although the ox yields us labor, meat, and leather, yet we could dig with the hoe and spade, and (though illy) dispense with him. But the sheep yields us meat for sustenance, and wool and leather for comfort, and how can we dispense with him?

After an understanding that each farmer is to depend on his own resources, (and this is the true principle,) if the question be asked me, which of those animals I would first relinquish? I would answer the hog—second the horse—third the cow—and lastly, the sheep. I can make bread without the horse or ox; I can subsist without bacon or beef, but the sheep affords me both meat and clothing; therefore, with a single choice, give me the sheep; but, as above remarked, I think that no farmer should be satisfied with less than all. But as there are exceptions to many general rules, so with this; for markets affect localities, and localities affect health—consequently, the circumspect farmer will adapt his business to his situation, and depend on barter to supply his wants, always remembering that this bartering is a consumption of time, consequently costly.

As to the breeding of horses, I profess to know very little about it; therefore, will dismiss the subject with a single remark, that a small horse is very nearly worthless on a farm. The only dreaded maladies amongst our horses are grubs and cholera; both of which, I have never failed to cure, by drenching with a decoction of white walnut bark. As to the proper food for a horse, I believe there is nothing equal to the old Virginia plan of corn and fodder.

Although I am a breeder of cattle on a small scale, and have some blooded animals, yet I shall hazard no remarks on the subject; only this I say, a small cow is almost as worthless as a small horse. I dread no disease of my cattle but hollow-belly and hollow-horn; the first of which I cure by feeding, and the second, by simply boring into the horn, underneath. So soon as a cow's eyes begin to appear dry and sunken, he or she should be caught, and the horn bored—if pure blood appear, stop boring that horn, for no disease is there—next bore the other horn. But one who is experienced can judge of the hollow-horn, either by striking or feeling. It may be well, in this disease, to apply a very small portion of spirits of turpentine, or a larger portion of any kind of oil to the exterior; but nothing should be applied to the interior of the horn. To rid cattle of lice, I cast salt profusely on their bodies during the whole time of their yarding, remembering to avoid the practice on a cold day. The salt not only destroys the vermin, but causes the cattle to be kindly affected. As to the food of cattle, I know from experience that the old Virginia fashion is murderous. Straw cannot be depended on; corn shucks (husks) are very good, but they are not in sufficient abundance; hay is badly wanting, and cabbage and roots would be extra.

Hogs are next in order, and I profess to know something about them. The first hogs I ever owned were the old English, and as they cost more than they came to, I got rid of them. I next sought after, and obtained the most chumpy wood hog to be had; for in those days there were no blooded hogs amongst us, except the China, and they were considered too small. These I continued, with some improvement, to propagate for more than twenty years, and finding that they, as well as they old English, cost more than they were worth, I should long since have abandoned breeding the hog, had not native pride forbade it. I next crossed these from a Barnitz boar, by which improvement I was enabled to balance the hog account at the end of the year. I next obtained a Mackey sow, the progeny of which was no improvement. I finally tried a cross of Berkshire and Bedford, Berkshire and Barnitz, and Berkshire and Mackey, all of which are good; but the stride in improvement is in the order in which their names stand. Being satisfied that there is no profit in breeding the best woods' hog in our country, I have killed and sold all such, nor could I be induced to accept of one as a present. When our country was full of weeds and wild roots, the woods' hog answered our purpose; but now, when our reliance is wholly on our fields, away with the long leg, long nose, squeaking woods' hog, and give me the short leg, short nose, lazy, grunting hog; then I have no creeping through fences, no running away, no lice, no measles, no worms.

My hogs are good, not fine; but in one more

year I hope to compete with any honest Yankee. I have a lot of pigs, now six and a half months old, which would weigh on an average, about 90 pounds net, which are intended for porkers about the first day of next March, when they will be nine months old, and will weigh about 140 pounds. They were injured by weaning when very young, for the purpose of bringing my sows to breeding at a specified time, otherwise they would be larger. My sows have pigs now about three weeks old, which are intended for pork when about twelve months old, and are then expected to weigh about 250 pounds.

The first pigs above mentioned, were fed from the 20th day of May till November, on cabbage, and a small portion of inferior rye meal, and could not have been called [fat] till lately, nor would a judge now call them so.

The young pigs, with their mothers, are fed with rye meal, with a small portion of corn occasionally. My fattening hogs, to be killed in the winter, are fed first with corn, cut up at the roots, so soon as the hog may be enabled from the maturity of the grain to gather it. The whole plant is cast into the pen, and after the grain, nearly all the plant is eaten. In addition to this, they have a daily, though moderate allowance, of either cimblins, pumpkins, cabbages or beets, and a goodly supply of weeds and grass. The lousy and wormy cabbage and beets are first, and, perhaps, only used in this way, and the weeds and grass are both food and manure. When I begin to cut up my corn, for the purpose of sowing small grain, my rule is to first pick, and stack only such as have ears; after which, the barren stalks are gathered for the hogs and horses. From this period I discontinue casting the whole plant to the hog. When the barren stalks are examined, they will be found to contain a much greater portion of saccharine matter than those which have yielded grain—hence, my preference in their use. As to the relative value of the secondary vegetables for feeding of hogs, with my present experience, I would prefer the cabbage; though it may be proper for me to remark, that my feeding with carrots and parsnips are very limited, and that perhaps I should have excepted the artichoke. But in some localities the cabbage cannot be raised to advantage; whereas, the beet and artichoke seem to be adapted to every climate, and nearly every soil. Cimblins and pumpkins are a general failure with me. This year I raised a small lot of Jerusalem artichokes, which my pigs are fond of rooting after; but as to their value I cannot speak, though not doubting it, I have secured a sufficiency to plant an acre next spring.

To rid my hogs of lice, I cast ashes on them when they (the hogs) are wet. For mange, I use oil, or any kind of grease. For worms, I give ashes and charcoal; without which precaution, my hogs of the old stock have sometimes been disgustingly wormy, but with their use not a worm is to be seen. Of late years I have no measles on my hogs, and I attribute its disappearance also to the use of ashes, of which the hog at intervals will freely eat, without compulsion. It is but very seldom that we have any malady amongst the hogs of this region, except those above mentioned.

In concluding this subject, I would remark that there are a good many blooded hogs in this section of country, but as they have been run down

by breeding in and in, the people have been discouraged, and I fear it will take years to regain confidence.

Lastly, I speak of sheep. I have been acquainted with sheep all my life, and have, except one or two years, owned and raised them since I was twenty two years old, (say 28 years.) The start of my flock was the common long legged, jumping, bleating, hairy sheep. These cost me but little money, to be sure, but they cost me much trouble and vexation; consequently, truly can I say, "it was great cry and little wool," ay, and meat too. I next got a cross with Merino, which was some improvement. I next purchased a Bakewell buck, with which cross I have a good flock. I finally have the Lincolns, with which I am highly pleased; and now away with the scrubs for me. I keep a flock of 200 to 400, and as my experience and provender may increase, I propose an increase of numbers. I am much laughed at by the majority of my neighbors for purchasing sheep at \$30 to 60, but my pride is gratified when I notice those very scollers stopping anon, and gazing with admiration at my flock. Those blooded animals are short legged, quiet, greasy, woolly sheep—no jumping over fences, no running away, no fuss. My flock is grazed on fields amongst the mountains, through the grazing season, and brought home for wintering. When at home, they go at large in all open weather through the winter, but are confined when the weather is disagreeable, with the exception of ewes with young lambs, and about to yearn. I have lately completed a close plank enclosure of about half an acre, with good and sufficient shelters for my flock. My fattening wethers are now in this enclosure, but will shortly be removed to another, and my ewes and last spring's lambs placed therein. There will be small apartments within this enclosure for the accommodation of ewes with young lambs, and about to yearn.

The flock will be fed with hay and cheap oats, and the ewes with young lambs will have the addition of beets, cabbages, and turnips.

It is complete folly for any one to attempt the raising of stock without attending to them, and particularly so as regards sheep. Clear them of ticks, lice, and worms, and no stock can equal them in profit. It is important that the flock should be attended daily through the summer season, particularly through the heat of day, for the purpose of keeping them in a clean shade, otherwise they will lie amongst their own filth, greatly to their detriment. In damp warm weather the sheep need salt; at other times I would not say they require it. Weeds are not proper food for sheep, for they scour; but the finer grasses and browse are their natural food, consequently, most grateful and fattening. When confined, my flock have pine at will. I dock the tails of my sheep, and mark the ewes and wethers differently, so that at any time I can lay my hand on the wanted animal. Ewes that are well fed, will rarely disown their lambs, unless they have twins; nevertheless, as a precaution, as they are about to yearn, each, or two or three together, should be put into a cot until their lambs are a few days old, when they can tramp about and distinguish their mothers.

There are only two diseases common to sheep in this region, to wit: rot and worms. For the rot I know of no cure, and have to rely on books

for preventives; nor do I believe that the rot is so common amongst us as imagined, for the worm in the head creates a distemper, the external appearance of which is very similar to the rot.

For the worm in the head I give tobacco snuff. By casting the snuff into a trough, and sprinkling salt thereon, the sheep in a scuffle, each for his share, inhale a portion into the nostrils and swallow the balance, which I am persuaded not only expels the worms in the head, but has a goodly effect on the bowels. The grower of tobacco should never fail to put his sheep on his sucker field; for the experience of my life, and that of others, proves the practice to be highly beneficial.

I have, during my life, seen only two cases of reeling sickness, and never a case of either foot rot or pox, or any other disease to do a serious damage, besides those above specified.

Perhaps the greatest evil attending our sheep, is the tick, (or large louse,) besides which, they are sometimes troubled with the louse proper, which is very small. For the destruction of those vermin, I have used a compound of train oil and tar; but this, although effectual, is filthy to both man and beast. I have tried the Yankee plan, of plunging the sheep into a vat, or trough of soap suds, and find its use cheaper, more expeditious, and more effectual than the oil and tar. The proper time for this operation at shearing. The lambs are then hardy, and before the clipped sheep is untied, immerse his whole body back-foremost in the suds. Economy will suggest the propriety of placing a large piece of bark (for which purpose poplar is best,) on the end of the trough or vat, for the purpose of casting back the drainage for further use.

When once a flock is clearly rid of those vermin, I suppose it impossible that they can regain them, except suffered to mingle with a lousy race; consequently, economy would further suggest the propriety of destroying them *in toto* as soon as practicable. And furthermore, it would be proper to remember, when a sheep may be brought in from another flock, to have him thoroughly purged before his introduction. Finally, if an estray scrub should get into your flock, and you cannot quickly or conveniently get him out, shoot, and pay for him.

Z. DRUMMOND.

Amherst, Dec. 15th, 1840.

#### THE FARMER'S WEALTH.

For the Farmers' Register.

Being diseased and confined to my room, and having read till satiated, I propose writing for your agricultural paper. I know not altogether what my subject may be, but this I know, that although confined in my hive, I am not content, like the drone, to eat idle bread. And although I may not be able to reach far enough to gather genuine honey, yet, sir, I have lived long enough to know, that the ingenious bee can extract some honey out of the coarsest material, and that coarse material, my fellows are welcome to. Indeed, sir, do I not write many scraps for you, when not confined, and are you not kind enough to insert them? What, sir! does the farmer only live to dig, and eat, and sleep, and die, and be remembered no more? Has he no self-pride, no national pride, no charity? Has



he learned nothing by observation, and profited nothing from the experience of others; and shall he die without attempting remuneration? Many farmers consider themselves independent of their fellows; "They know enough about their business, and ask no favors." They prattle as loudly as pet geese, and I wish I had the means of letting them know that they have no more brains. The most enlightened farmer is yet comparatively ignorant of his business as a science; and until scientifically prosecuted there can be no comfortable profit. It is true, that many farmers do, by dint of hard licks, gather up a fortune; "but when they die, they know not whether they leave it to a wise man, or a fool." When the farmers as a body shall become convinced that they are not mere drudges, and their official duties more than simple clod-knocking; and that for the sake of health and wealth, every art and science can, and should be brought to their aid—then, and then only, shall they and the nation prosper. I continually remember your motto, Mr. Editor: "that whosoever could make two ears of corn to grow where only one grew before," &c., but, sir, the process by which the double crop is produced must be promulgated, and then truly the author "deserves better of his country than all the race of politicians put together."

But whither am I wandering? When I took my pen, it was with the intention of writing on the subject of domestic animals; but now I doubt whether I shall at all touch the subject, yet, I beseech you bear with me, and I know you will, when I solemnly declare that my intentions are honest and charitable.

I spoke a short space back, of wealth, and now let us inquire what constitutes the farmer's wealth? I wish I had the power of indelibly imprinting in the farmer's mind, the query. What constitutes the farmer's wealth? Reflect farmer; investigate the subject, for investigation leads to understanding; and when this matter is understood, all will be plain sailing. Yes, although the winds may blow anon, and the waves toss us from the direct course, yet knowing the situation of the breakers, we shall finally arrive safely in port.

What constitutes the farmer's wealth? My dear sir, this subject is too deep for me, but let me try it.

Does money constitute the farmer's wealth? Oh no; money is only the representative of property; I can neither eat, drink, nor wear it. It will not manure my grounds, neither is it medicine.

Is it waste or poor lands, which constitute the farmer's wealth? Oh no; these like the money are unprofitable in any hands. It is true that the stock of money may be improved by lending it to others on usury; so likewise can the waste and poor lands be improved by a loan. If I lend to my neighbor, I may lose, although I take security; but if I lend to my land, I am certain, with proper demeanor on my part, to get back in due time both principal and interest.

Is it slaves which constitute the farmer's wealth? Oh no; for although these constitute a portion of the bone and sinew of the country, yet there is no dependence in them; they must be ordered, followed, and with few exceptions driven, and sometimes whipped. In early days, when the forests were to be felled, and the ground tilled

with the coulter and hand hoe, slaves were valuable; but now the scene is changed; the lands are fenced, the stumps gone, the grounds become compact by the combined operations of sun, wind, and the tramping of animals; and consequently a neat and scientific culture must be adopted, or there is no profit. Our slaves are ignorant, which is one great barrier to improvement; but the greatest is their lack of interest in their labors. Where there is no interest, there is neither industry, nor economy; and where these are wanting all is misery. Be not uneasy, reader, I am a slaveholder, and intend to hold on to them; for I am persuaded that until a general emancipation I can do no better.

Is it race horses or whisky? Oh no; these are always a curse in the hands of the farmer.

Is it trading? Oh no; remember the old adage of too many irons in the fire; a speculator cannot be a farmer, nor *vice versa*.

Is it a number of bony horses, cows, and pigs? Oh no; misery on the animals, and misery on their owner.

In what does the farmer's wealth consist? I presume that it consists of strength of mind, strength of body, education, industry, economy, rich lands, high fences, stout horses, fat cows, hogs, and sheep, a snug house, and a tidy wife.

Just as I expected, my paper is out, and I have not touched the intended subject, but I trust that this is not my last.

MOUNTAINEER.

Amherst, Dec. 1840.

SOWING GRASS SEED THICK AND EVEN, NOT THIN AND IRREGULAR, IS THE TRUE INTEREST.

From the Farmers' Cabinet.

One of the most frequent errors in agricultural operations, is sowing grass seeds too thin and unevenly; great is the loss in either case, while nothing is easier than to remedy both. In the spring of 1838, clover-seed was very scarce and dear; some sowed none, and others scattered it as thin as possible over the ground, and the effects of this proceeding have been visited with great severity on the delinquents. There has been a deficiency of hay and pasture, a thin, bare sod to plough down; the manure heap has shrunk in its dimensions for want of provender, and the subsequent crops have been proportionably starved and diminished. This season clover seed is very abundant, cheap and of good quality, and it might be well for the provident to lay in a store against a season of scarcity and high prices, and this may readily be accomplished by putting it in a tight, dry cask, through the bung-hole, and bunging it up and keeping it in a dry place where it is believed it will remain good for several years to come. Clover should be one of the grasses sown, but other seeds should always accompany it, as there is a larger crop where several kinds of grasses are grown together, sometimes the season being favorable to one and not to another. Many farmers begin to think it more profitable to raise orchard grass than timothy, where selling of hay is not intended, as it furnishes more pasture, both early, and late, and is equally good, &c.

not better, for home use as hay. Timothy bears a higher price in the market than other kinds of hay, and the reason probably is, that horses eat less of it in a given space of time, as it is a good deal of work to chew it; hence, tavern-keepers uniformly prefer it, being for them more economical.

P. D.

#### DAMP STABLES.

From the Farmers' Cabinet.

Sir:—When I came to the farm which I now hold by purchase, I found the stables built under large trees and near a spring of water, with a northern aspect; my horses were soon in poor condition, with long and rough coats, and almost always lax in the bowels, nor could I get them up by extra food or lighter work; but my cows suffered most, for they were always sick; their milk fell off, and their butter was poor and of a bad color and taste, and four of them slipped their calves before their time: when the spring came, they left their winter quarters in a worse state than I had ever seen them, and two of them died from the scours on going to pasture. On inquiry, I found that the tenant who had left, had always been, what the neighbors termed, unfortunate in his horses and cattle, and from that cause, more than any other, he had not been able to make both ends meet. The truth flashed upon me in an instant, and in a very little time longer than it has taken me to tell you my story, I had commenced pulling down the stable, the unhealthiness of which had been, I was convinced, the cause of all the evil and all the loss, and it was not more than two days before there was not left one stone upon another of the whole fabric. I now set to work and erected another on higher ground, removed from water and clear from the shade of trees, with a south-east aspect and dry spacious yard; and from that day I have had neither sickness nor sorrow in my out door household; my horses live on less food, are always sleek and in good working condition, and my cows are a credit to their keep; our butter brings two cents a pound more in the market, and for the last year our sales are more than doubled from the same number of cows, and the same pasturage; and no more premature calves. Instead of watering my cattle, as heretofore, at the spring under the trees—the water cold, with a deadly taste and bad color—I sunk a well and put in a pump, and at a long trough in the yard for the summer, and another under shelter for the winter, my cattle slake their thirst, without setting up their coats as they always used to do after drinking at the hole under the trees; even when the weather was warm, they were accustomed to shake all over as though they were in a fit of the ague, after drinking their fill of this water; and to this, with the bad aspect of the stables, I attribute all the sickness and misery which I have experienced amongst my cattle and horses.

I have been induced to tell you the above, by reading in a valuable English work, called "Simple Economy," some observations which would go to show that the writer, like myself, had enjoyed the experience of the truth of what he so well describes; and as they fully corroborate all my con-

victions, I should be glad of the opportunity to present your readers with what he advances on the subject, if it meets with your approbation; and am your constant reader, M.

"A damp stable produces more evil than a damp house: it is there we expect to find horses with bad eyes, coughs, greasy heels, swelled legs, mange, and a long, rough, dry, staring coat, which no grooming can cure. The French attribute glanders and the farcy to a humid atmosphere, and it is a fact that in a damp situation we find these diseases most prevalent: when horses are first lodged in a damp stable, they soon show how much they feel the change; they become dull, languid and feeble, the coat stares, they refuse to feed, and at last work they cut their legs in spite of all care to prevent them: this arises from weakness; and while some of the horses catch cold, others are attacked by inflammation of the throat, the lungs or the eyes; most of them lose flesh rapidly, and the change produces most mischief when it is made in the winter season. Horses in constant and laborious employment must have good lodgings and kind treatment; but where the stables are bad, the management is seldom good, and it is no exaggeration to say, that hundreds of valuable horses are destroyed every year by the combined influence of bad stables and bad management. And although excessive toil and bad food have much to do in the work of destruction, every hostile agent operates with most force where the stables are of the worst kind.

Stables should always be erected on dry ground or that which will admit of perfect draining, with the surface a little sloping. Stables built in a hollow or on marshy land are always damp, and when the foundations are sunk in clay, no draining can keep the walls dry; the dampness will follow up the walls from the deepest foundation. It is true that damp stables may be rendered less uncomfortable by strewing the floor with sand or sawdust, and, in some cases, a stove-pipe might be made to pass through the stable near the floor, but such stables are liable to frequent and great alternations of temperature at every change of the state of the atmosphere. Some of the means usually employed against dampness in dwelling houses might be adopted in the construction of stables, so as to prevent the walls from absorbing the moisture of the soil, such as a foundation of whinstone to the surface of the ground, covered with a coat of Roman cement or a sheet of lead; or the foundation may be sunk so low as to admit of its being laid in coal dust or other substance which does not absorb water; and, although precautions of this kind may sometimes prove salutary, they ought not to be trusted to where a dry, airy, healthy situation can be obtained; frequently whitewashing the walls with lime seems to have an influence in removing moisture and keeping them dry. The owner of a damp and uncomfortable stable often wonders why so many of his horses catch cold; "there are always some of them coughing." Now, if he were to make that stable his abode for four-and-twenty hours, he would have but little to wonder at. Large stables are objectionable, and have nothing to recommend them but cheapness in the erection, so that when it is more important to have a cheap than a healthy stable, a large one may be indulged in;

the saving in the end, however, may eventually prove a loss, if the builder of the stable be the owner of the horses. A very large stable cannot easily be ventilated; it requires a lofty roof to give any degree of purity, and contagious diseases once introduced into such, spread rapidly and do extensive mischief before they can be checked."

#### REMARKS ON GREENSWARD, ORCHARD GRASS, AND OTHER GRASSES.

For the Farmers' Register.

Since I became a farmer, my observation has brought me to the conclusion, that many lands on the Eastern Shore were well adapted to grazing. The diminution of our black population, by the purchases of the south-western speculators, and the fear of being sold, which has occasioned many a poor fellow to fly to the free states, has produced with us a serious want of labor, which, as far as it has been tried, has not been well supplied by the Germans who have come into this part of the country. Before they suit us, and we suit them, we must come down a little more to the practical habits of liberty and equality. My views have led me to inquire into the different species of grass which grow in the different regions of our extensive country; and I was much pleased with the paper of Mr. Stevenson on the blue grass of Kentucky, of which I had heard, but of which I had very imperfect information. Mr. Stevenson suggests that the greensward grass, or yard grass of Virginia, is the blue grass of Kentucky. In the same situations, we have the same grass. By referring to the 7th volume of the Farmers' Register, page 20, some account will be found of the Pennsylvania green grass, which I have no doubt is the blue grass of Kentucky, and the greensward of Virginia and Maryland. As some of your readers may not find it convenient to turn to the volume, which is now before me, I will give concisely the statement, premising that General Evans, from whom I obtained the information, is an old farmer, and very intelligent and observant. He stated that he well remembered when what we call blue grass in Maryland, rooted out their red clover, which is now succeeded by green grass. They esteem it their best grazing, and cut it for hay, though it does not afford so abundant a crop as orchard grass or timothy. It is a hardy plant, and I saw it in luxuriant growth in the month of November, after the heavy drought of 1838, and I am inclined to think it will resist the frost as well as orchard grass. I entertain no doubt, but the green grass, on General Evans' farm, was the result of lime and putrescent manure. Certain sections of Chester county abound in lime-stone, but on his farm there was none, and there was much sand in the soil, mixed with slate. I had a lot which I improved well seven years ago with marl and putrescent manures, which I have since dressed with some manure from my stables and cow yard. It was sown in orchard grass. I have taken a crop of hay from it every year, and sometimes two. The orchard grass is running out in part of it, and it is succeeded by green grass.

I concur with Mr. Stevenson, if the lands of Virginia be well improved by marl and putrescent manure, and I add those of Maryland, they will

produce what is called green grass in Pennsylvania, and blue grass in Kentucky. I believe they will require neither sowing or setting. I rely upon fact, and leave the causes to philosophers and geologists. "*Felix qui rerum potuit cognoscere causas.*" General Evans saw the appearance of green grass in his fields, which drove out the fibrous blue grass, and no seed were sown. None was sown in my lot, and, I infer, none on Mr. Ruffin's fields. My speculation is, that where a great alteration occurs in the soil, whether from natural or artificial causes, a modification takes place in some productions of the earth. In support of this, I will state another fact. When my father built his house, where I now reside, more than sixty years ago, his good taste, contrary to the usages of the times, induced him to spare a contiguous wood. To improve the vegetation, I have carried some marl on it, and wherever it has been spread, white clover has sprung up so thick as to expel the sour grasses of the forest. I cannot believe that the seed was carried there by the birds of the air or the winds of heaven, and exposed to heat, cold, and moisture, retained their vegetative power till called into action by the marl.

Mr. Stevenson supposes, that the Kentuckians would be willing to swap their "devil's bit" for Virginia blue grass. I do not know how the proposal will be accepted in Virginia, but I would not agree to it on the part of Maryland. Our blue grass, though a sore pest in our wheat and corn fields, affords good grazing in lack of better. Though the devil's bit is a hard name, I will agree on the part of Maryland to take it in full exchange of St. John's wort, Richardson pink, spear plantain, and a few Canada thistles.

I apprehend the great fertility of Kentucky is founded in its calcareous soil. Lime corrects acidity, and, according to Mr. Ruffin's theory, gives permanency to putrescent manures. The falling of the leaves, and the decaying vegetables in combination with the lime, make rich beds of the manure for ages, whilst undisturbed by the axe or mattock, and when cleared of the underwood, the beautiful blue grass sprang up. Nature has done for Kentucky, what industry has done for Pennsylvania; and which it can do for Virginia and Maryland: and perhaps, in time to come, some erratic Kentuckian may find in Maryland, fields of grass that will remind him of "the glorious pastures" of the Elkhorn Paradise.

Since I wrote the above, I have received the American Farmer of the 30th ultimo, which contains an inquiry from the Kentucky Farmer, in relation to orchard grass, and an answer from the Cincinnati Republican; some parts of which, do not concur with my experience and observation. Orchard grass to me is an important crop; I gather neither blades or tops, and cut no other hay—it constitutes the rack food for my carriage and saddle horses, for my farm horses when they are at work. I feed my calves on it in the winter, and my oxen when I can afford it.

I esteem a strong clay the best soil for orchard grass, so level as to retain the rain which falls, without receiving it from the adjacent lands. The drought of 1838 was abiding and severe, and the part of the lot which I have mentioned, where the orchard grass has been succeeded by green grass,

\* This inference is correct.—ED. F. R.

was of lighter texture than the rest. The crop on the whole lot was diminished in 1839, but on the strong clay it recovered last year, and I cut a good crop. I sow in March or September, as suits convenience, and have never failed since I sowed seed. None can be depended upon, except the plant be perfectly ripe, and I apprehend the failure of vegetation and the tufting of the plants, are mainly owing to imperfect seed, or sparse sowing. Two and a half bushels to the acre is not too much; I prefer three. Those who sell have strong temptation to gather immature seed; when the plant is ripe, the hay is of no value, and the aftermath much impaired. Orchard grass for hay, ought to be cut and secured when it gets into full bloom. If the weather be fine, it may be cut in the morning, and by the method directed in the 1st volume of the *Farmers' Register*, page 162, (which I pursue,) put into cocks in the evening, when it will be safe, and may be drawn in at pleasure. The only loss it will sustain, is by absorption at the bottom, if the cock is suffered to remain out a long time. I have never grazed my orchard grass in the spring, but freely after my hay is drawn in till hard frost, removing the hocks when the ground is saturated by rain; and I have full evidence then of its great value, in rich milk and fine yellow sweet butter. I heard a gentleman say, in whom I have full reliance, that from the first and second crop weighed in the field, after it was cured, he got six tons to the acre. I esteem two tons and a half a good first crop, and do not cut a second if my first be sufficient for my consumption.

The inquiry about orchard grass having come from Kentucky, I have made this addition to my communication, as a small return for Mr. Stevenson's valuable and instructive paper, on the blue grass of Kentucky. WM. CARMICHAEL.

Wye, Queen Ann's county, E. S.  
Md., Jan. 6th, 1841.

#### INQUIRIES AND REMARKS ON SALT, AS A MANURE, AND ESPECIALLY FOR COTTON.

"Have you seen a late English work, '*Johnson on Fertilizers*,' in which he discusses some recent experiments in that country on salt as a manure? particularly in combination with compost, farm-yard manure or lime. They are so important that I am anxious to see them transcribed into your useful periodical. He is spoken of in the '*Library of Useful Knowledge*,' as high authority, and if he is to be credited, salt would be a cheap manure at two dollars a bushel. Besides, he recommends it so highly for destroying weeds, if put on a season in advance of the crop, and for destroying worms and other insects infesting a crop, that I am desirous to see it in print, that experiments may begin extensively through this country. I should not be surprised, from his trials, that a top-dressing of a bushel an acre, sown over cotton in June, should destroy the worm which has so dreadfully consumed our crops in the south. At that season of the crop, the worm is burrowed about six or seven inches deep in holes made in the ground; and he informs us that worms in that situation are certainly destroyed by salt in small quantities thrown over the earth."

The foregoing extract is from the letter of a distinguished southern planter, whose name we are always pleased to present with his communications, whenever not forbidden by his order, as in the present case.

The essay of Johnson on salt as a manure would have been published long ago, but for our want of confidence in his opinions. Upon the desire expressed above, we shall take an early opportunity to publish either Johnson's own article, or his and other opinions on that subject, as given in the '*Farmers' Series*' of the '*Library of Useful Knowledge*.' The use of salt as manure has been frequently urged, upon the ground of great benefits produced by it in particular cases. It has as often excited the hopes and enlisted the active zeal of some theoretical writers, and again fallen into neglect, because of failures in practice. As a general practice, salting land for its fertilization, at any rate of quantity, has not been found advantageous or profitable. But, even if not a general fertilizer, or a fertilizer of soil at all, still it may be highly beneficial as a destroyer of predatory insects, (if taking care not to give so strong a dose as to injure the crop on the land—) and still more, probably as a *specific manure*, or food essential for certain crops. This last opinion we have long entertained, and have before expressed it in this journal, as well as have published every known fact on this very important point. Many plants cannot grow except on a salt soil. There is no doubt that salt is a specific manure for asparagus, and there is a good reason to believe that it is also a specific manure for the very important crop, cotton. On the latter head, see articles at page 677, vol. iv, and pages 45 and 46, vol. v. The two first we copied from the '*Southern Agriculturist*.' The last, our own (editorial remarks) being short, will here be copied:

"It seems to us that salt must act as a specific manure for cotton, and is essential to produce the fineness of fibre that constitutes the value of the sea-island cotton. As different as are the quality and appearance of this cotton from the green-seed, or short-staple upland cotton, they are but varieties of the same kind, the most valued of which, rapidly runs into the other, by mere change of soil. The one kind is raised, in perfection, only on the low sandy islands on the sea coast of Georgia and South Carolina, and the adjacent shores of the main land. If the seeds (which are naked and black,) are planted in the interior, though but little remote from the sea, the product is what is called the "*long-staple Santee*," a green-seed cotton, but of longer fibre than the ordinary upland cotton, into which, however, continued planting from the same, finally brings the crop.

It has been supposed that the very sandy nature of the soil of the sea-islands was the cause of the peculiar value of the cotton they bear. But if so, some spots, at least, might be found equally sandy, in the interior of the country, and the same kind

of cotton be there produced successfully. But the accounts we have in the foregoing and other articles of the peculiar value of salt mud and salt grass, as manure for cotton, indicate plainly that salt itself is necessary for the perfection of cotton, and that it is owing to the salt already in the soil of the sea-islands, and the adjacent low coast, that to such narrow limits the production of that valuable variety of cotton has heretofore been confined."

In what manner *specific manures* act upon the plants for which they are either very important or essential, has not been satisfactorily explained in any case. The facts, however, are not the less certain, in the ascertained cases; and there may be many other as important cases, which have not yet been observed. Thus carbonate of lime, or some equally serviceable form of combination of lime, and in considerable quantity in the soil, is *essential* to the growth of clover. Gypsum (sulphate of lime) is another *important* specific manure for clover, but not as indispensable to its existence as other forms of lime. The acid of earth, which is a poison to valuable crops, is indispensable food, or a specific manure, for sorrel, poverty grass, and some kinds of pine trees—none of which can live after this acid has been effectually neutralized by manuring with lime. If then, though in a less essential degree, salt is a specific manure for cotton, it may well be that a very small quantity may produce important improvements to that growth, though no other cultivated crop might receive any perceptible benefit from a like application.

ED. F. R.

#### THE FARMS AND FARMING OF THE RICH LEXINGTON DISTRICT IN KENTUCKY.

The following sketch, by a New Englander, hasty and imperfect as it must necessarily be, presents a picture of this celebrated body of land, more interesting, and perhaps more truly reporting the general appearance, than we have seen before. The cause is, simply, that it was drawn by a stranger to the region, and who of course described what was to a stranger most striking and novel. An old resident of this same district, perfectly well informed in regard to it, and withal a very capable reporter, would probably have made a less interesting and vivid description, because he would have passed over very slightly, and perhaps without proper description, if not without notice, matters which he would suppose too well known to need mentioning, simply because they were so well known to the reporter, and, as he would infer, to every body else. Thus it is, that if the tendency to this fault is not kept continually

in view by an agricultural reporter, and carefully guarded against, the very circumstance of intimate knowledge of the subject will cause his description to be meager, uninteresting, and therefore of little worth. On the other hand, a stranger would be liable to the more serious errors growing out of ignorance and misinformation.

We have never seen this highly favored region, but know that none better deserves a full descriptive and agricultural report. If our valued correspondent, Th. B. Stevenson esq. of Frankfort, would undertake to furnish such a report for publication in the Farmers' Register, he would add much to the obligations which this work and its readers already are under to his pen. And whether he might make the report as full as desirable, or merely a general and superficial sketch, still, if he will write it as to readers *totally uninformed* on the subject, he will be sure to make an excellent and valuable article. No agricultural reading is more generally interesting or improving, than reports of particular farms, or farming districts. Very many of our readers, by their acquaintance with some such subjects, could easily prepare such reports, and thereby render most acceptable service to the Farmers' Register, and through it, to the agricultural public. Have we not some readers, and friends and supporters of our work, who will render this desirable and important service?—ED. F. R.

From the Boston Cultivator.

If geography and history had not placed the Eden of the primitive world in eastern climes, you would have sworn this must have been its site. Nature has been lavish here of her bounties in soil, vegetation and climate. For 60 miles around, the land is of the richest alluvial earth, from 5 to 10 feet in depth, resting upon a stratum of limestone. Its surface, at a distance, appears like a vast plain; but entering it, the ground is found rolling like the long swelling undulations of the ocean. The country, every acre of which is as rich as your garden spot,—is divided into extensive plantations of 500 to 2000 acres, each with its farm-house, and its negro cabins clustering around it, placed in the centre, remote from the highway, surrounded by a grove, broad avenues lined with trees leading to it.

Col. Clay, of Fayette county, has an estate containing upwards of 6000 acres, most of which is devoted to pasturage, and he sold in 1839, I was informed, upwards of \$30,000 worth of cattle upon the hoof, a part of which were driven to the New York and Brighton markets.

Many districts in this rich grazing country present the anomalous condition of a country increasing rapidly in wealth, and advancing in improvements, while decreasing in population. The reason of this singular state of affairs is, that the small farmers are selling their circumscribed farms to the wealthy graziers, who are monopolizing the lands in their vicinity. This was peculiarly the course of events in 1836 to 1838, while beef

and stock commanded exorbitant prices; the low prices of beef for a year or two past, have, however, arrested the tendency to accumulate the lands of a few large proprietors.

Corn and rye fields are planted and sown here for the purpose of feeding cattle upon them, standing in the field. Rye is never gathered for domestic use, and it strikes an eastern man as a most wasteful and improvident mode of farming, to turn a herd of cattle into a rich and ripened field of grain to feed upon and trample it under their feet, and when they have feasted and gorged themselves upon it for a few days, the swine are let in to gather up the scattered and mutilated remains of the harvest.

The farmers in the vicinity of Lexington possess now the finest breed of cattle in the world. For many years large sums have been paid, and much care and labor incurred by them, to procure the best specimens of English stock. Agents have annually been sent to England to purchase, without regard to cost, the choicest bulls and cows of the most famous breeds. These being transferred to the luxuriant pastures and genial clime of Kentucky, their offspring improve in all their characteristic points of excellence and surpass their progenitors in size and beauty. I saw yesterday, heifers three years old, that would weigh fifteen hundred pounds, and which were the most perfect models of beauty; and their calves of this season, now four or five months old, would weigh down an ordinary cow of full growth, and these lusty fellows were bleating after their dams and tugging away at the teat like young sucklings; for here cows are not kept for milk, but to raise calves; and no butter and cheese are made upon these large stock farms for the market.

The rearing of horses and mules is also a source of great profit, and the echo is awakened through the sylvan pastures by the perpetual bray of the stultified ass, and the neighing of the prancing blood horse, which, like the bees, being kept principally for breeding, are seldom subjected to the bit and harness, and in their wild freedom they start at the sound of strange footsteps, snuff the air, and bound off in the unrestrained liberty of the untamed prairie horse. From twenty to fifty horses are kept upon the large estates, and usually as many mules. A few days since, upon the rich bottoms of the Scioto, near Columbus, I saw upwards of 300 mules grazing in one pasture.

In a country where pork is so important a staple of production, it would be supposed that great care would be given to procure the best breed of swine; but the long-snouted, lank and slab-sided race, seen running wild in large herds through the woods, exhibit an astonishing indifference in their owners to the improvement of this description of stock.

There is no class of men who enjoy a greater freedom from the cares, anxieties and labors of life than the planters of this fertile region. They are the princes of the land—free from debt, living in the enjoyment of princely incomes, and upon estates, some of which almost equal a small German principality in territory.

#### AGRICULTURAL SOCIETIES.

A friend, for whose opinion we entertain great respect, writes as follows:

*December 3rd, 1840.*

"I do not exactly agree with you, in your dislike to agricultural societies and all their works. I think there are many persons, who, like myself, need such an institution, to make them write. You may, perhaps, have observed many who never displayed any energy, unless when placed somewhat under the control of others. They make good public officers, that is, attentive ones, while they are certain to neglect their own business. Such persons will write "by order of the society," when they never could be induced to do it, on their own responsibility. If there were many societies formed, for the purpose of collecting and diffusing information, and suitable committees of revision and publication appointed, so as to throw the odium of rejection from you, the Register might soon be *deluged* with matter."

As it is our misfortune, or the effect of our fault, to be frequently misunderstood, we should not have been much surprised at the above construction, by a more slight and careless remarker. But we are greatly surprised that an inference so different from our intention, should be drawn by one who we know attentively reads and highly values our publication. We are very far from entertaining "dislike to agricultural societies and all their works." It is not for their works, but their *no-works*, that we value many of them at a low rate. *Really working* agricultural societies would be of incalculable value to agricultural improvement—and, directly or indirectly, we have expressed that opinion again and again in the Farmers' Register, and urged the establishment of such societies with all our power. And every work performed by one, every experiment made, every communication of practical instruction sent forth by any of our agricultural societies, we always heartily welcome, and are sure to publish. But our friend must know that such works are among the smallest and rarest operations of agricultural societies in general. All that they do, in any of the various modes of ascertaining and establishing truths, making experiments, collecting facts, and diffusing information on agriculture, is excellent—and if our friend will use his zeal and influence to increase such good fruits, he will find us equally zealous to extend their circulation through the Farmers' Register, and thereby multiply the good effects. In all such things, the existing agricultural societies, and all that may be established, will find no more hearty approver of, and zealous and efficient aid to their labors, than the Farmer's Register.

#### INOCULATING.

To the Editor of the Farmers' Register.

Being somewhat dextrous in inoculating trees, and wishing to ascertain whether the process of

grafting or budding would (as is commonly supposed) prevent the growth of thorns on trees disposed to bear them, I inoculated a young honeylocust tree with two buds, one from the extreme end of a limb of an old tree, the other from a thorny little limb of its own, near the ground. The first of these had no spines, the other was very full of them. From this experiment, I infer, 1st, that grafting and budding have no influence on the propensity of trees to bear thorns; secondly, that certain trees seem, by nature, to be provided with spines about the body and lower limbs, to protect them from being barked or otherwise injured, and possibly, to protect their fruit from vermin. Among the fruit-bearing limbs, however, there is no need of thorns, and if buds or twigs are procured from these, for ingrafting on seedlings, the trees thus produced are free of thorns.

#### ROOT FEEDING.

To the Editor of the Farmers' Register.

King William, Jan. 20th, 1841.

Do urge on your readers the importance to them of going more largely into the root crop this year. I, together with several of my neighbors, cultivated last year several acres of them, sugar beet, mangel wurzel, and ruta бага, and succeeded well. We all give the decided preference to the sugar beet as food for milch cows. The butter and milk are rich and fine, but we have not as yet made any accurate experiments in feeding them. My overseer brought a cow with him to my house about Christmas, which he informs me was fed plentifully upon short corn and fodder all last fall and winter up to the time she came here, and since his removal, she has eaten nothing but about three pecks of sugar beet per day, and the usual long food; and upon this feed has doubled, and more, the quantity of milk, besides a considerable improvement in quality. I feed once a day on steamed roots, and once on raw, and am not prepared to say which is best, as they are greedily eaten whether cooked or raw.

We are getting in a stock of the far famed Berkshire hogs hereabout, and are well satisfied with them as far as our acquaintance extends; I have owned a pair about eighteen months, and have readily sold all the pigs I could spare at good prices.

#### COMPARATIVE VALUE OF THE COCOONS OF THE "TWO CROP WHITE" SILK-WORMS, AND OTHER VARIETIES.

For the Farmers' Register.

Stafford Co. Va., Jan. 25th, 1841.

I have recently made numerous experiments in reeling cocoons produced by the "two-crop white," and "mammoth sulphur" silk-worms, from which I have ascertained that the former yielded on an average, from cocoons of fair quality, 8 ounces of reeled silk to the bushel, and the latter 14 ounces. These facts lead me to change the favorable opinion hitherto entertained of the "two-crop white." I am now convinced that

they will bring the culturist in debt who operates with hired labor, while the sulphur and other good varieties will show a handsome profit.

The comparative value of the varieties above named may be stated thus:

Cost of producing one bushel "two-crop"	
cocoons,	\$2 00
Reeling the same,	1 50
	<hr/>
	\$3 50
Deduct eight ounces raw silk,	2 67
	<hr/>
Loss,	0 83
Cost of producing one bushel sulphur cocoons,	\$2 00
Cost of reeling,	75
	<hr/>
	\$2 75
Fourteen ounces raw silk,	4 67
	<hr/>
Profit,	\$1 92

The pea-nut silk-worm is said to yield on an average sixteen ounces of silk to the bushel, but, as yet, my experiments with this kind, have not been made on a scale large enough to form accurate conclusions.

The above named facts, however, show that the success of silk-culture in Virginia, and throughout the union, may depend on the varieties of silk-worms selected.

Respectfully your's,

LAYTON Y. ATKINS.

#### KENTUCKY BLUE GRASS SUPPOSED NOT TO BE THE SAME WITH GREEN SWARD. GRASSES FAVORED BY CALCAREOUS SOIL. MELILOT.

December 5th, 1840.

I have just received the November number of the Register, and find it asserted, that Kentucky blue grass is identical with *poa viridis*, or our common greensward. Now, personally, I pretend to know nothing about this matter; but a gentleman in this vicinity, well qualified to judge in the case, declared to me some time ago, that *he knew* they were not the same. He said, at the same time, something about the flower-stem of the Kentucky blue grass being jointed, and that there were, occasionally, some bunches of it to be found on the banks of the Appomattox. He was speaking of the blue grass of our lime-stone valley, where he has resided much, and, doubtless, this is the same blue grass with that of Kentucky. I mention this not for publication, but to prevent your hastily settling the question, as I find in a note to S. D. Martin's communication to the Southern Cultivator, you set down Kentucky blue grass as "green sward." The *poa viridis* [or *poa pratensis*] is certainly an American grass, and so much resembling that called "blue grass" beyond the Blue Ridge, that it must take a botanist to say, whether they be not the same. Our "blue grass," *poa compressa*, has a flattened flower stem, and is really blue. I think the subject important, and that possibly, on particular investigation, you will find the western blue grass another indigenous American grass, closely allied to the greensward.

Among the many benefits to your tide-water region, in the commencing agricultural era, from

the use of marl, those from the cultivation of grasses promise much. I am convinced, that without calcareous manures, grass cannot, on a large scale, be cultivated profitably, except on strong neutral soils. There are fine grasses already known and cultivated in various parts of the world. It is probable, however, that many more are still to be discovered; particularly, such as are adapted to the peculiar climate and soils of the United States. In this neighborhood, about the sites of old settlements, which have been rendered calcareous by ashes, the common melilot, a large species of trefoil, grows with amazing luxuriance. It has been considered a nuisance, and unavailing attempts have been made to exterminate it. I found some of it on this farm when I took possession; and observing that the crops, of wheat and tobacco, following it, were astonishingly productive, and, moreover, that I could easily, when necessary, turn it under my large Clute and Reagle's ploughs, I have carefully cherished it, and have sown some six or eight bushels of seed. But, to my mortification, I find that it will not grow on other than calcareous lands. May I recommend a small trial of it to you on marled land? I can assure you, that the crops of wheat and tobacco, on the site of its growth, without any additional manure, surpass those on surrounding lands which are heavily manured. It affords fine grazing for cows and sheep in winter. I have some exhausted second low-grounds, in which may occasionally be seen some small calcareous nodules, and about eighteen inches beneath the surface, is a stratum of clay marl, an inch or two in thickness, lying on, what appears to be, mouldered hornblende rock. I sowed some melilot seed on this ground last winter; and though the land is so poor, that before, it would not produce even poverty grass, and nothing else but a very diminutive white clover, I found that the melilot seed vegetated, and grew quite well all the summer. I hope you will hear from it again.

#### INQUIRIES AND REMARKS UPON THE CALCAREOUS ROCK AND SOILS OF SOUTH ALABAMA.

For the Farmers' Register.

*Claiborne, Monroe Co., Oct. Jan. 7th, 1841.*

I will now add a few lines on a subject of deep interest, and one likely to engage attention in this region of country, at no very distant period, the subject of marl or calcareous manures. Not many years since, a Mr. McGuire wrote a treatise on the geological formation of South Alabama, which appeared in Professor Silliman's 'Journal of Science.' He describes a rock of limestone formation, abounding in the counties of Monroe, Clark, Washington, and Marengo, which he had seen quarried, and when dried, was extensively used in building chimneys. This rock lies the sides of the creeks and branches in my neighborhood, and is composed, (apparently,) of innumerable small shells and sand, united into a cement. Masons, in building chimneys, use the scrapings or shavings in mortar, and it seems to answer almost as well as lime. In fact, but for the action of fire, which gradually decomposes the back of the fire-place, the chimneys last re-

markably well. There are some of twenty years' standing, and they look neat, and when merely white-washed, resemble marble. Some of my neighbors have used the shavings as manure, and describe its action as resembling marl. For instance, there is little or no benefit perceptible the first year; but the next, and succeeding, the soil deepens, becomes dark, and loose, or stiff, (as clay or sand prevails,) resists drought, or the intense heat of our summers; and these qualities are the more conspicuous by the deep rich green of the vegetables growing in such soil. I am no chemist, and have not the means of ascertaining the component parts of this rock; but what *proportion or per cent.* of lime is necessary to form cement resembling rock? A rapid and powerful effervescence takes place when vinegar is added to it; and would not this be the case with the *carbonate of magnesia* as well as of *lime*? In the vicinity of creeks or branches, whose sides are walled with this rock, *mounds* of lime-stone rock of every imaginable shape or size, are to be seen, which, when broken into fragments and burnt, makes excellent lime for mortar or coarse plastering; and would not this make *manure*? Manuring has been entirely neglected in South Alabama for the obvious reason that lands have been abundant and cheap; and for the same reason, the most exhausting and careless cultivation have greatly impaired the fertility and productiveness of our richest soils. Emigration, that once threatened to depopulate the old states, has already commenced here; and Texas, already the receptacle of some of our best citizens, is often spoken of, as the *Ultima Thule* of wealth, ease, and luxuriant indulgence.

LORENZO JAMES.

The foregoing letter, proceeding as it evidently does from an observing and inquiring mind; is a striking illustration of the great existing difficulties of diffusing agricultural facts and knowledge, even after they have been laboriously gathered, and published; and of the immense loss of value suffered by a vast region of our country, in consequence of ignorance of such facts and instruction.

Our correspondent is but a recent subscriber to the Farmers' Register, or he would have known that, throughout the work, and especially in the earlier volumes, much attention was paid to the investigation of the remarkable calcareous soils of an extensive region of Alabama and other southwestern states. The article to which he refers, by Mr. McGuire, was there re-published, and many more from correspondents, as well as our own elaborate essay 'On the formation of Prairies,' in vol 3. The latter, as well as several copies of the 'Essay on Calcareous Manures,' for gratuitous distribution, where they may render service, we have sent to our correspondent. He will there see that all his suppositions expressed above, as to the action and value of the rich marl, or "rotten lime-stone," of South Alabama, are correct, and he will correctly infer, from all the facts, and the general reasoning, that by a proper practical application of the theory of the action of calcareous



manures to his singular region, that many of his countrymen might make more profit at home, by retaining, or even increasing, the early fertility of their lands, then by destroying their productiveness, and then seeking new lands in Texas.

All of the soft calcareous rock, to which our correspondent refers, and which forms the subsoil, and sometimes the upper soil, of the greater part of the lands of several counties in Alabama, is very rich, judging from the specimens which we have analyzed—probably, seldom less than 70 parts in 100 of pure carbonate of lime. That degree would be enough to make good lime (by burning) for cement, or for manure—and better for both, of course, if richer, as doubtless it is often. But, if it crumbles by exposure, or can be coarsely pounded, more cheaply than to calcine it, no burning is needed to prepare it for manure.

The practical use of calcareous earth, as manure, would, of course, be very different, in general, in Alabama, when it is so often in excess, from lower Virginia, where it is almost universally deficient. But the knowledge of the theory of its action is not, therefore, the less important to be known, and kept constantly in view by the cultivator. It will teach how to guard against the evils of an exclusively calcareous soil, as well as those of acid soils; and to the cultivators of rich virgin and excessively calcareous soils, in South Alabama, Arkansas, and even in Texas, the Paradise of land-thieves and land-killers, it offers the choice of retaining, or even increasing the virgin fertility, or of finally reducing the lands to the present sterile condition of Judea, or of the high lands of Egypt, both of which are highly calcareous, and formerly also highly fertile.

Our correspondent is right in supposing that the carbonate of magnesia, if present in the soft rock, would show similar effervescence. But a practised eye would detect a difference, (if there was much magnesia, compared to the lime,) by the slower effervescence of magnesia. But there is little ground to fear the *hurtful* presence of magnesia. We have never known of its presence, (in any quantity worth notice, if at all,) in any marl, or rock, of shelly origin. The marls of South Carolina, which Dr. Joseph Johnson analyzed, and reported as containing a large proportion of magnesia, seemed a remarkable contradiction of this our long entertained opinion, as well as a very interesting fact in itself. But, we learned from that gentleman, in a recent personal interview, that he had been mistaken in his supposition of the presence of magnesia in those marls, as he had subsequently ascertained by subjecting his process to a more rigorous test.

Though calcareous matter may be generally excessive on the "bald prairies" or "rotten limestone" lands of Alabama, still many localities of "sandy-lands," are interlocked with the calcareous, need much to be marled, and could be very cheaply covered. Indeed, as we have heard the relative positions and qualities of these different kinds of land described, (for we have never seen them, except in specimens for analyzing,) each of these soils would be the best manure for the other; and a cart in making trips of (sometimes) not 100 yards in length, could take loads both ways; putting calcareous earth on the sandy and acid soil, and sandy soil to lessen the excess of calcareous matter in the other.—ED. F. R.

#### REMARKS ON THE SUPPOSED DISCOVERY OF THE HESSIAN FLY.

From the Farmers' Cabinet.

Discovery believed to have been made in relation to the Hessian fly. Compiled for the Farmers' Cabinet, by Benjamin H. Coates, M. D.

A paper presented to the American Philosophical Society by Miss Margaretta H. Morris, of Germantown, and relating to the above-mentioned subject, was subsequently ordered by that body to be published in their Transactions. As, however, some time will elapse before the appearance of the number of the Transactions which will contain her paper, we have thought that we could better serve the agricultural readers of the Cabinet by extracting the information given in a journal recently authorized by the Society to be published by its Secretaries, in an abridged form and of earlier appearance. In the "Proceedings" just printed for November and December, 1840, we find the subject mentioned, in some paragraphs of which we here subjoin a copy.

"The committee, consisting of Mr. Nuttall, Mr. Lea, and Dr. Coates, to whom was referred a communication by Miss Margaretta H. Morris, on the *cecidomyia* destructor or Hessian fly, reported in favor of publication, which was ordered accordingly.

"The committee express the opinion, that should the observations of Miss Morris be ultimately proved correct, they will eventuate in considerable benefit to the agricultural community, and, through it, to the public. Miss Morris believes she has established, that the ovum of this destructive insect is deposited by the parent in the seed of the wheat, and not, as previously supposed, in the stalk or culm. She has watched the progress of the animal since June, 1836, and has satisfied herself that she has frequently seen the larva within the seed. She has also detected the larva, at various stages of its progress, from the seed to between the body of the stalk and the sheath of the leaves. In the latter situation it passes into the pupa or 'flax-seed state.' According to the observations of Miss Morris, the recently hatched larva penetrates to the centre of the straw, where it may be found of a pale greenish-white semi-transparent appearance, in

form somewhat resembling a silk-worm. From one to six of these have been found at various heights, from the seed to the third joint. They would seem to enter the pupa state about the beginning of June.

"This fly was not observed by Miss Morris to inhabit any other plant than wheat.

"To prevent the ravages of this destroyer of the grain, it will be proper to obtain fresh seed from localities in which the fly has not made its appearance. By this means the crop of the following year will be uninjured; but in order to avoid the introduction of straggling insects of the kind from adjacent fields, it is requisite that a whole neighborhood should persevere in this precaution for two or more years in succession. This result was obtained, in part, in the course of trials made by Mr. Kirk, of Bucks County, Pa, with some seed-wheat from the Mediterranean, in and since the year 1837. His first crop was free from the fly, but it was gradually introduced from adjacent fields; and in the present year the mischief has been considerable. As Miss Morris states that the fly has never made its appearance in Susquehanna and Bradford counties, seed-wheat free from the fly, might be obtained from these and probably from other localities.

"The committee recommend that the conclusions of Miss Morris 'may be subjected to the only efficient test—repeated observations and effective trials of the precaution she advises.'"

Believing the above to be an observation of very considerable importance, and sincerely hoping that repeated trials and examinations may confirm its correctness, we have prepared the present notice for the Cabinet, in order to bring it before the agricultural community.

Miss Morris's observations and inferences agree very well with what we know of the habits of many insects. Thus they are, as a general rule, not produced till their food is ready for them; while their eggs appear to approach the seeds of plants in the power of enduring long delay and some violence, before they lose their vitality and faculty of development. The eggs of silk-worms are kept for various periods, and still retain the susceptibility of being hatched. How long this power, in some insects, may be capable of enduring, has not been ascertained; but the presumption arising from their analogy to seeds leaves it by no means certain, (until observations are made,) that the period may not be one of magnitude. The lower animals are said by naturalists to approach, in constitution, much more nearly to vegetables than to the more complex beings of their own class; and this is acknowledged to be strikingly exemplified in the instance we have been reciting. Something analogous may be perceived in the instance of the common fowl; in which species, the eggs first laid are allowed to remain till enough are accumulated for the parent to commence setting, and without, in any way injuring the product.

That highly and justly distinguished American naturalist, the late Thomas Say, has left us an entomological description of the Hessian fly, in the first volume of the Journal of the Philadelphia Academy of Natural Sciences. He appears never to have identified the insect in an earlier portion of its life than the flax-seed state. Thus, he describes the larva, first state or "maggot" of the

animal, as resembling the pupa or second state, except in the dark, reddish-brown color of the latter; and alleges that, "when taken from the culm, it is almost inert, exhibiting very little motion to the eye." This was in 1817; and as that eminent writer was principally occupied in the task, then new, of describing and classifying American insects in their perfect forms, it is entirely credible that he might have erred in relation to their earlier stages; nor is it wonderful that, in 23 years, further discoveries should be made, and his account corrected. What Mr. Say calls the larva, will, if Miss Morris be correct, be considered the early period of the pupa.

The discovery of Miss Morris, then, appears principally to resolve itself into the fact of the egg being deposited in the seed; and into the history of the pale green worm or larva, as the primary stage of the animal's existence. The account of its periodical change given by Mr. Say is confessedly conjectural; and insufficiently explains the preservation of the species through the winter. His words are, "The history of the changes of this insect is probably briefly this." He then proceeds to describe the parent insect in depositing its eggs within the sheath of the leaves, near the root of the plant, the fixed mode of life of the flax-seed substance, together with the indentations produced in the straw, the distortion of the flax-seed worm when crowded, and the death of the plant. He then adds the following notice, which ends the recital. "The perfect fly appears early in June, lives but a short time, deposits its eggs, and dies—the insects from these eggs complete the history by preparing for the winter brood." The words would seem to imply that there are two broods of these flies; one for summer and one for winter. If "preparing for the winter brood," means laying the eggs which are to produce them, why are not the flies seen in the end of October; before which time the sheaths of the leaves and the straw itself of the winter wheat do not exist, and at which period no fly of any description is to be met with in the fields? If, on the other hand, "the insects from the eggs laid in June," are *themselves* "the winter brood," they are to be found in the stubble after harvest; and cannot possibly be the same individuals that are found next spring in the damaged stalks of the new crop.

According to the facts believed to be ascertained by Miss Morris, the difficulty at once disappears. The fly lives only ten days; during which time it deposits its eggs. The eggs remain unaltered till the wheat sprouts; and the young worm is then below the surface of the earth, in a substance which is not frozen, and which supplies him with food.

The residence of the worm, as described by Miss Morris, within the hollow of the straw, is precisely like that of certain other insects. The animal that destroys the more luxuriant shoots of the parsley-leaved elder, and which, in its perfect state, becomes, as we are informed, a beetle of splendid coloring, passes its larva-existence within the pith of the plant. Additional examples, we believe, are not difficult to be obtained.

To the directions given in the "proceedings" for avoiding the production of this pernicious insect, little seems necessary to be added. We are inclined, however, earnestly to repeat the

recommendations of further trial and observation. It would seem that the farmer who uses seed-wheat from a district ravaged by this animal, actually commits the absurdity, of *planting Hessian flies* for the benefit of this next year's crop!

The precise period at which the minute green worm escapes from the hollow of the straw, to repose and undergo its subsequent changes beneath the sheath of the leaf, is not ascertained with accuracy; and may furnish a question for investigation. We are informed that Miss Morris is continuing her observations on growing wheat; in which she will probably ascertain the fact. It is in the power of our readers to confirm or reject her conclusions, both in this and in what she regards as already established.

The observations above stated may perhaps amount to stronger confirmation of the position assumed than had before appeared; but certainly they do not constitute a "new discovery," or present the opinion advocated for the first time. Besides other less public supporters (within our knowledge) of the opinion that the eggs of the Hessian fly are deposited on, and sown within the grains of wheat, there were three several articles maintaining the doctrine, in the first volume of the *Farmers' Register*, (See pages 351, 723 and 724.) But though the views of Miss Morris have not the merit claimed for them, of originality, they will be sufficiently valuable to the public, and honorable to her, if affording *confirmation* of an old opinion, heretofore deemed by us, and most other reflecting or observing persons, as entirely erroneous.

But incredulity on this head does not forbid an earnest desire to be convinced that the opinion of Miss Morris is right, and that ours, (that the egg is deposited on the blade, after the coming up of the wheat,) is wrong. Therefore we present this new reiteration of an old and before discredited opinion—and recommend to all wheat-growers to try experiments in various ways to test the truth of the opinion. This may be easily done; and a few careful and accurate experiments, in one season, may either overthrow or establish this opinion, which, if indeed true, would furnish the readily available means of saving millions of dollars every year to the wheat-growing region of this country. Besides the remedy named above, of obtaining seed from uninfected districts, there might certainly be found some easy means to disinfect our own seed—that is, to kill the eggs of the fly, by some exposure that would not affect the vitality of the grain. That would be all that would be requisite to remove totally all future evil from this heretofore destructive source. Either the keeping seed wheat for a year or more before sowing—or exposing it to unusual degrees of heat, or cold—or to certain acrid steeps—might serve the purpose desired. We know of two farmers in our own former neighborhood who held the opinion

that the eggs were laid on the grain, and who supposed that they had proved by full experiment the certain means of destroying the eggs on the grain, and thus avoiding all damage from the fly. One of these gentlemen relied on steeping the seed in salt water, and drying in quick-lime, (as for smut,) and the other poured boiling water over his seed wheat. Each of them fully confided in his means of prevention, from a time; but after a few years, both were satisfied of their mistake, by their own later experience.

But, still, we repeat, let experiments be again and fairly tried. There are few subjects, in which both animal and vegetable reproduction are concerned, which are more capable than this of being subjected to strict and accurate experiment. One obvious mode of experiment, would be to sprout grains of wheat on soil in a glass vessel, covered with gauze too close to admit the Hessian fly, or a small gnat. If the maggots (or larvæ) should be nevertheless found on the spires of wheat, (and we have heard such a fact asserted,) it would be at least one strong proof in support of the new doctrine. And if no maggots were produced, under circumstances otherwise entirely favorable to their production, it would be at least strong confirmation of the opposite opinion. In addition, other parcels of seed might be subjected to various steeps, or kinds of exposure, and then sown, both in open air, and in places from which the fly shall be excluded by coverings of gauze.

It would not cost as much labor as has already been used in writing in support of this new doctrine; to prove its truth or its falsehood, beyond all dispute. Perhaps a greater amount of experimental labor, scientifically and carefully directed, might ascertain the true source of the evil, and its certain remedy. It would be well (if disposed to do *any thing* for the benefit or relief of agriculture) for each wheat-growing state to offer a large and permanent premium for this discovery. If Virginia had offered and reserved for this valuable object, the eight or ten thousand dollars annually thrown away on the *geological survey* of the state, we would have at least saved all that has been given to support that *job*; and if the premiums had been earned by the discovery sought, the gain to the agriculture of our country would have been incalculably greater than the reward paid for it, enormous as the sum would be deemed if it had been directed to that truly valuable object, instead of to its actual and comparatively worthless direction.—ED. F. R.

#### AGE OF TREES.

Some of the cedars of Mount Lebanon, measured in 1660, by Maundrell and Pocock, were

found to have been nearly 800 years old—the English yew trees of Fontaine Abbey, in the county of York, had survived 12 centuries, those in the churchyard of Crowhurst, in Surrey, 1400 years—that of Fotheringill, in Scotland, from 2500 to 2600—that of Braburn, in Kent, 3000. These travellers describe two other trees of a most remarkable character, the Baobab, estimated to be 5150 years old, and the cypress of Taxodium, in Mexico, 117 feet 10 inches circumference, still more aged. A sycamore near the ruins of Heliopolis, according to the tradition in Egypt, existed before the visit of Joseph and Mary, and they sat under its shadow and drank water from a neighboring well. Another of the same species, termed the sycamore of the Bosphorus, and computed to have been 4020 years old, has disappeared, leaving ten sprouts which sprang from the stump; one of which being measured, was found to be 1050 years of age; and it is possible others equally old have been destroyed, and that the present trees are the second remove from the parent stock. The celebrated chestnut of Mount Etna, 2660 years old, grew from the stump of a felled tree.

In America, more than a hundred and forty different species of trees attain an elevation of thirty feet and upwards; while in Europe only thirty-seven grow to that height, but eighteen of which enter into the composition of forests, and only seven are employed for domestic or maritime purposes. There are stated to be 53 species of the oak, in North America, 17 of the pine, and 8 of the maple. We have 11 species of the walnut, while not one is indigenous to Europe, the variety commonly cultivated there being a native of Persia.

#### MANURE FOR COTTON.

From the (Cheraw) Farmers' Gazette.

Having read a piece in the Gazette headed "Profit of Manure," three or four weeks ago, showing the value of manure for making cotton, I have concluded to give you another instance. The instance to which I refer, is that of a planter in the Pee Dee country, with whose manner of planting I first became acquainted in 1834. He planted that year one hundred and fifty-five acres, and manured twenty-five or thirty. He gathered eighty thousand pounds of seed cotton. At the close of that year, he determined to make more manure than he had hitherto done, and for that purpose took three old negroes of little value for any thing else.\* But his manure being all put on his corn land, he made in 1835, only sixty-five thousand pounds of seed cotton. The number of acres planted was one hundred and forty-seven. In 1836 he planted one hundred and thirty-five acres in cotton, (twenty less than in 1834) manured eighty acres, and made eighty-two thousand pounds of seed cotton, (two thousand more than in 1834.) The same year he manured twenty-five acres of corn land. In 1837 he planted in cotton one hundred and seventy acres, of which he manured only thirty-three acres, putting his manure on the corn land. He made ninety-three thousand pounds of seed

\* Least this sentence should mislead some northern philanthropist, we state for explanation that the three old negroes were not used for manure, but as laborers to collect manure.—E. F. R.

cotton. On the thirty-three acres manured, he made twenty-nine thousand six hundred and eighty pounds. Finding his manured land planted in cotton do so well in 1837, he determined in 1838 to plant no more than he could manure. He that year manured and planted 125 acres, from which he gathered one hundred and six thousand, four hundred and fifty-two pounds of seed cotton. In 1839 he planted one hundred and twenty-five acres, manured nearly all, and made one hundred and six thousand, five hundred and eighty-seven pounds of seed cotton. The present year (1840) he planted one hundred and twenty-three acres; manured the whole. Product ninety one thousand four hundred and ninety one pounds seed cotton. Notwithstanding that the past has been a very unfavorable season for cotton, part of a field which been planted in cotton three years in succession, produced one thousand pounds to the acre.

December 26, 1840. AN EYE WITNESS.

#### MONTHLY COMMERCIAL REPORT.

For the Farmers' Register.

The most prominent change in commercial affairs since the commencement of the year, is the resumption of specie payments by the banks of Pennsylvania and Delaware. It was expected that those of Maryland would have made a simultaneous movement. They, however, threw the onus of protracted suspension on the banks of Virginia, which was promptly repelled by the latter, who declared their readiness to waive the privilege given by law, and to resume at the earliest day the Baltimore banks would name. The result is, resumption in both states on the 1st of February. North Carolina declares (inofficially) her readiness to do the same, and no doubt will. South Carolina resumed some time since, and the law of Georgia is imperative in her banks, so that in all the Atlantic states, specie will very soon be current. What course will be adopted by the banks of the western states, remains to be seen, but apprehensions are entertained, that they will not follow the example.

Tobacco commands better prices in our markets than it did a few weeks ago; the demand is chiefly for home use, which is increased by the extension of our factories, while the supply has been moderate, owing to the prevalence of wet weather during the greater part of this month. Sales range from \$4 to \$4½. There has been no improvement in European markets. France obtained so large a supply last year, in anticipation of a war, that she will require none during the present; consequently, a greater proportion of the crop will be shipped to British and other markets. Kentucky and Missouri tobacco, particularly stemmed, is annually superceding that of Virginia; but the increased operations of our manufacturers may counterbalance this.

Cotton has gradually advanced in prices, under the impression that the crop of the past year will be small, compared with the preceding one; but as very large stocks, both of the raw material and of the manufactured article are held in all European markets, and as any considerable advance in price would diminish the consumption, it is not probable that present rates will be much exceeded.



# THE FARMERS' REGISTER.

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EDMUND RUFFIN, EDITOR AND PROPRIETOR.

ADDRESS OF DR. W. S. MORTON, PRESIDENT OF THE AGRICULTURAL SOCIETY OF CUMBERLAND.

Delivered 13th Nov. 1840—Published by order of the society.

**Gentlemen.**—The unusual pressure of professional engagements has, of late, left me but little time to prepare for an address, and led me to fear that the day of meeting might find me totally unprepared. But this fear, though unpleasant, has not caused half such anxiety, as the apprehension that, from apathy in the cause, so few members might attend, as to render preparation unnecessary. What should be the grounds of such apprehension is not difficult to divine. Unbounded political excitement appears to have absorbed the feelings of all ranks, ages and sexes of society. But few seem willing, even for a short time, to confine their attention to any other subject. With general politics, as a subject, this society has nothing to do; and were I, or any other member to introduce it, with party feelings, or a design to produce party effect, I trust that it would be promptly and decisively rebuked by a vote of censure. But remarks, honestly and impartially made, in relation to the awful bearings of political strife, on the highest enjoyments and richest blessings of life, unconnected with party feeling, and undefiled by a cunning design of indicating any party or any individual, surely cannot be improper. There is no greater obstacle to our prosperity and happiness, as men, as citizens, and as agriculturists, than party spirit. Freedom of opinion, freedom of speech and of the press, have justly been considered among our greatest blessings. Their abuse is, of course, the heaviest curse. The purer and more valuable a coin, the baser is its counterfeit. The most enlightened statesman, or the humblest citizen in the land, has a right to speak his opinions freely, if they are honestly formed. And even zeal in their propagation may fairly be ascribed to patriotism. But he knows not the meaning of that word, who, forgetful of the cause of truth and of his country, and mindful alone of his own selfish and petty interests, and his allegiance to party, abandons the field of fair argument, and resorts to private abuse and personal detraction, to the propagation of calumny, to every art calculated to mislead and deceive, to excite the worst passions, and destroy the peace and happiness of the community. Such a man cannot be a patriot. No—he has a fair claim to the title of a selfish demagogue—a reckless and mischievous agitator. The pure cause of republicanism needs no such combatants and no such weapons, but is in continual danger from them. In times of political ferment, the tendencies to such evils are insidious, and they are strong. Even good men are liable to be misled—else, why is it, that all complain of them and dread their consequences, while none are willing to bear the blame? Why is it, that so many of our best and ablest men avoid the political arena, as they would pollution?

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Why is it, that while we all profess to be republicans—to hold nearly the same doctrines, we so often feel the earthquake agitations in the very foundations of society, and dread some awful and ruinous explosion? It is because party spirit, like some horrid demon, is stalking abroad in the land, devouring and poisoning all that is good. Where is the remedy for such evils to be found? Not on earth—it is a pure spirit and dwelleth on high. The spirit of love alone can vanquish the vile spirit of party. It is that spirit, without which, though a man “speak with the tongues of men and of angels,” he is “become as sounding brass or a tinkling cymbal.” The great fabric of society is built up of many members, and the individuality of each must be lost, by being cemented together by the pure spirit of love, in order to render the whole sound. This is the true theory of society, for it is derived from holy writ. While “*E Pluribus Unum*” waves gloriously on our banners, its meaning, to the fullest extent, should be engraved on our hearts. A propitious time, it is hoped, is approaching to lay the fell spirit of party. The wild tornado of excitement which has recently swept over the land, must surely be followed by a calm, during which, the wise and good may have time to reflect on the difference between party and country—men and principles. Should they refuse to afford themselves as mere fuel to excitement, there might be some hope that the salamandrine agitators would be starved out, from the deprivation of their natural element. The return of peace, after such a civil war in disguise—as disastrous, perhaps, in its influences on the moral condition of society, as actual warfare—would be cheering to every true patriot. Should the state of hostility continue, gloomy indeed must be our forebodings.

But we will turn from this fearful subject, to some more directly within the province of our discussions. In doing this, gentlemen, permit me to hope that we will renew our devotion to the objects of our society. They are worthy; and the more industriously they are pursued, the more peace and happiness will they afford.

Laying no claim to the character of an efficient and practical agriculturist, I find myself, on such subjects, much in the condition of a certain preacher, of very exceptionable character, who was in the habit of closing his discourses, by charging his auditors, by no means to do as he did, out of the pulpit, but to do what he told them, when in it. I could do but little good, by telling you all or any thing I have done. I might, however, afford considerable amusement, could I bring myself to confess what I sometimes schemingly hope to do. I hold, that it is not the practical man alone that can render service to a society like this, or to the community at large. Even the visionary schemer, into whose class by the way, I am not willing fully to enrol myself, may often do much good to the shrewd and practical, if they will cull from his hints or experiments, what seems to be supported by reason. Like the daring pioneer in a wilderness, he sometimes unfolds valuable discoveries to

the more cautious who follow him. I believe that, on investigation, it would be found that but few of the most valuable discoveries in the arts of life, have been made by prudent, calculating, practical men. Labor-hating propensities are admirably calculated to set the wits to work, on the discovery of labor-saving expedients. It ought, however, to be acknowledged, that the class of men, usually stigmatized with the name of *schemers*, are not, generally, much influenced by the desire of gain. Some of them, indeed, are actuated by the highest motives. It is no matter of surprise that such are not, what are usually termed, thriving men. Those who expect nothing are rarely disappointed.

In previous addresses, I have dwelt at some length on the ordinary operations of farming in this region. I will now make a few remarks on the various kind of stock and their management.

In Virginia, so much attention has been paid to the horse, the noblest of our animals, and books on farriery are so common, that all who desire information on this matter, may easily obtain it. I would only observe, that many of our teams are destroyed, and most of them much injured, by overpressure of service in very busy seasons, particularly in the spring of the year, and while fallowing for, and seeding wheat in the fall. No animal can long sustain labor, without serious injury, which is so brisk as materially to hurry his respiration. He who pushes his horse onward, while panting with fatigue, subjects himself to the reproach of inhumanity, and very probably, to what such a one will feel more acutely, the loss of the animal. The error of most proprietors consists in confiding horses, without the necessary supervision, to the tender mercies of those, who neither know nor care how much these animals can, with safety, bear.

In the management of cattle, in middle Virginia, inattention, on the part of the master, to their comfort is as manifest, as it is in regard to that of horses. Indeed, I believe, it is much more common. Until a very few years past, scarcely any one thought of feeding cows upon any other, than what one of our worthy members called "the *bran and shuck* system." Indeed, there were not many who cared to provide bran; but it was generally thought, that the offal of the small grain crops was all-sufficient for cattle. It is pleasing to observe some improvement in this matter; and as the returns, both in profit and comfort are so great, it is hoped that this subject will soon attract the attention it deserves.

On the subject of cattle raising, a question has been started, and, to judge from the practice, settled in this region, on which the propriety of keeping much stock of this kind depends. It is, whether the fertility of land can be better preserved and increased, by the aid of cattle, in converting speedily into manure, the offal of crops, grass, &c.; or, cattle being dispensed with, and the land being relieved from the injuries of tooth and hoof, it might not more rapidly improve from the natural decay of such of its productions, as, in the other case, would be appropriated to the sustenance of cattle? With the attention usually paid to cattle in this region, I would readily admit the truth of the latter branch of the question. I consider that there is almost no attention paid to these animals. Their summer pasturage is not always good. Indeed, the attention paid them during

seven or eight months of the year, is only to keep them out of mischief. Except this, and they are left pretty much to scuffle for themselves. Their winter keep consists of corn-tops, shucks and wheat-straw, and these, if the weather be bad during their preparation, make miserable food; and even when in the best state of preservation, are only calculated to carry the majority of their consumers through the winter. In addition to this, some provide for their milch cows, very closely bolted bran, which, with a few cabbage leaves and turnips, if they happen to be on hand, will furnish a quantum sufficient of blue milk to get along with during winter.

The management of manure is about as careless as that of its producers. In summer, most people move their cow-pens often enough to make a turnip patch of tolerable size. To do more than this, would interfere too much with the tobacco crop. In winter, since the publication of 'Arator,' I believe a majority of farmers construct what is called a farm-pen, and some of them haul into these some corn-stalks and some leaves. But many permit their cattle to roam through their farms, poaching the land, and trampling the wheat in wet weather, and seeking a cheerless shelter among the young pines; or, if these be wanting, lowing, by the leeward of a worm-fence, in tones that should make their master's heart ache. Under such management, it would be unreasonable to expect the manure made to be an equivalent for the expense and damage incurred from the stock. It should be remarked here, that there are very numerous and laudable exceptions to the foregoing modes of management.

In attempting to draw the other side of the picture, we will be compelled to go a little into the regions of fancy. Having never seen cattle managed as they ought to be, it is difficult, either to point out the means, or to conceive the full amount of benefit from the increase of manure and of milk, butter, meat and leather. Manure has been pronounced the farmer's sheet-anchor. It is to him, as capital is to the money-lender. It may be suffered to lie idle and waste, or it may be so managed, as to bring compound interest. And there is here no law limiting the rate. The man who enriched five acres more than his neighbor this year, receives in the crop more profit, and has so much added to his capital, which, for years to come, under proper management, may be increasing his means of enriching more land, while it is constantly adding to his profits. The oftener this sort of capital is turned over, the better. And herein consists one of the benefits of cattle. They enable us more speedily, to convert into manure, the offal of the crops, the artificial grasses, or the spontaneous productions of the earth; and thus, generally, these yield interest one year sooner, than if left to the slower process of natural decay. It has been said, that as much is abstracted from the value of the manure-making material, for fertilizing purposes, as contributes to the sustenance of the animal. This is doubted. But admitting it to be true, the residuum, after nourishing the animal, is in so much better condition for immediate use than the raw material, as more than to remunerate the loss. If all the manure from one cow for a whole year could be properly applied to a given portion of the land, it is believed that the succeeding crop would be much greater, than

from any application of the food consumed by the cow, for the same length of time; and moreover, that the increase of crop, beyond what the land might have produced, without the manure, if of a suitable kind, would be more than sufficient to sustain the cow another year. It is admitted by all, that any ordinary land may be improved by returning to it, as manure, the whole of its crop. Here the land receives more than it has given off, doubtless from the atmosphere, the vegetation having drawn thence part of its sustenance. Is it not equally probable, that in the economy of nature, animals being in a higher grade of creation, may also be permitted to return to mother-earth more than they draw from her? They certainly, very materially modify the raw material, by animalizing it, to use a modern term.\* The fact, I believe, does not bear contradiction, that for success in the production of certain crops, wheat for instance, animal manure is absolutely necessary. May not the scarcity of this, be one reason for the general failure of our wheat crops of late years? I have known a very industrious and successful planter, recently dead, who, preferring to give back to his land its product, during its year of rest, determined to keep no cattle, except a milch cow and a yoke of oxen. He had also to determine, in a very few years, to aim at making no wheat, except for family use, in a lot or two near his stable. He has repeatedly told me, that his land, though very good, would not yield wheat. I judge it was from the want of animal manure. Our limits would be transcended, were we to go into an investigation of the best modes of making, preserving, and using manure. The object at this time is, to urge the necessity of keeping on every farm, a sufficient stock of cattle for its production. This cannot be done to advantage, without making very great changes in the arrangements and management of our farms, as regards their comfort and support. These changes cannot, with propriety, be made very suddenly. All general changes, to be safe, must be gradual. Very few of the experimenters have, as yet, learned to make good wine in this country. When, if ever, we shall generally cultivate silk successfully, is yet to be learned. But the necessity for caution in any enterprise, is no argument against its practicability. The question which constantly meets us must be answered—is there necessity for a change? Is the old way good enough? Let our impoverished fields, our lean kine, our shabby sheep and hungry hogs answer. An increase of manure would remedy many evils. Of this, I have said enough. As to other inducements, consisting in a plenty of milk, butter, meat and leather, I am sure I need say nothing, if I can only tell how they can be obtained.

\* This question merits full and mature investigation. It is not doubted, that vegetables return more than they take from the earth. Could it be demonstrated that animals do the same, what a display of the wisdom, power and goodness of the Creator would be afforded? The atmosphere would then appear as the grand laboratory, in which is prepared the food of all living things; and he, who has made the world out of nothing, is here seen, by a mysterious perpetuity of changes, affording to all things sustenance, in a supply limited only by the skill and assiduity of man, in adapting the means to the end. The votary of agriculture, while drawing his support from the earth, has presented to him innumerable lessons of the soundest theology, and incentives to the purest piety.

In the first place, we must have more meadows, and we must consume their products on our farms. If we have no meadow lands, we must cultivate on high land some kind of crop, with a view to the better sustenance of our stock. Besides the artificial grasses, the root crops and pumpkins and other vines promise to aid us much in this matter. The turnip, which in the moist climate of Great Britain, has done so much for agriculture, will rarely succeed here. Our climate is too liable to drought in the fall season for this root; but I can most confidently recommend the beet. I have been cultivating this crop for stock, on a small scale, for some seven or eight years, and have never experienced a failure. My best crops have, however, been invariably produced in the driest years. I believe that six or eight times as much food for cows, sheep, or hogs, may be produced from the same quantity of land in this crop, as in any other that I have ever tried. The kind which I greatly prefer, is the white Silesian sugar beet; it withstands cold much better than the mangel wurzel, and, I believe, is more nutritious. I received a few seeds in the fall of 1836, from my friend Mr. Ruffin, of Petersburg, and have scattered them largely since; with what benefit to my friends I cannot tell, but to myself, I consider them almost indispensable. I believe that no man, who would provide a plenty of beets or pumpkins to feed his milch cows for one winter, could be satisfied without them afterwards. The recommendations of the beet as food for stock, in our agricultural journals, are so strong and so respectable, as to render a refusal to try them, by those who love economy and comfort, quite inexcusable. Their product is prodigious on the richest land, and they are well worth cultivating on that of medium quality. If the introduction of turnip husbandry into England, is considered there the greatest era in their agricultural history, we may well be thankful, that a root, much richer and more productive, is found so well adapted to our arid country. There are two things specially to be attended to in its culture. The soil should have a clay substratum, and the land should receive a thorough winter or fall ploughing, to destroy insects. I lost every young beet on three-fourths of the land planted last spring, from neglecting to plough in the fall. I made out a fine crop, however, from transplanting.

It can hardly be necessary, in this society, to make any remarks on the importance of attending to the breed of cattle. I know it is very common for people to ridicule the idea of its importance, and to indulge in the idle slang, "that the feed makes the breed." But these very people will sometimes send twenty miles for a puppy of a good breed when they want a good dog. Without the feed, I know that no breed can be good; but some breeds will be a great deal better on the same feed than others.

Cattle should not only be well fed, but well sheltered, to promote their own thrift and comfort, and their master's profit.

On the subject of sheep, I have but little to say. They pay well for a little attention. They should be penned every night, for the sake of their manure, and to protect them from dogs and other marauders. The number kept on a farm, should about equal that of the persons in the family. On an average of children and adults, one sheep will



about furnish wool for one person. At about five years old, a fracture occurs in the two middle lower front teeth, forming a notch between them. After this they should be marked for mutton, as it is very unprofitable to keep a flock of old sheep. One lamb should be "turned out" in the place of every mutton killed. Any extra lambs may be killed. The ram should be changed annually, viz.: if one can find among his friends and neighbors any sheep worth breeding from. In winter they should be sheltered from the inclemencies of weather; and the ewes, especially, should be well provided with succulent food—such as beets, turnips, carrots, or cabbages, particularly if the ground be covered with snow. Lambs can bear cold as well as any animal whatever, after once standing on their feet. Their great mortality in winter generally arises from want of milk, which the kind of food recommended for their mothers will ensure to them.

As to hogs, gentlemen, after what passed at our spring meeting,\* it might little be expected, that

\*At the meeting in the spring, the author of the address having complained that he was nearly foiled in his attempt to raise hogs, by the propensity in his sows to eat their own pigs, became the subject of much pleasant raillery from a very particular friend, who urged as the only proper course, that such unnatural mothers should be killed, and their places supplied by a better breed. This was, however, not adopted, as, excepting the great fault complained of, the breed was particularly a favorite one; it is a cross of the Bedford and Chester. The few hogs raised, were uncommonly fine ones. By noticing the time when the sows might be expected to farrow, and giving them for two or three weeks beforehand a plentiful supply and variety of succulent vegetables, and occasionally some of the condiments recommended above, I have been able to save, since last spring, about forty beautiful shoats, without having one devoured by its mother.

The food early in the spring, besides a little corn, and but a little, may be beet and turnip, and other roots which may have been kept through the winter. A little later, it may be clover and other grasses, and almost all kinds of weeds. Through the summer and fall it may be cimblins and other refuse from the garden and kitchen, and in their season, pumpkins constitute a superior kind of food for hogs. The sows should be permitted to have pigs, in this climate, only between the first of March and first of October. Winter pigs are not worth raising in the richest part of Kentucky.

He who has enjoyed an opportunity of observing the snug arrangements made by more northern farmers, for comfort to the stock and profit in the raising, will be at no loss in accounting for our great failures in this matter. In stock-raising, as in every other human concern, success is the reward only of diligent and zealous effort. Who gets rich, besides those whose hearts are much devoted to the object? In middle and lower Virginia there is much laudable industry and enterprise manifested in the mere production of crops. This is followed by success, but generally, at a vast expense in the impoverishment of land, the destruction of teams, and total negligence of stock. Providence has placed under our management a wonderfully complicated system, which, for completely beneficial results as a whole, depends upon rigid attention to all its parts. Few proprietors study and practise this system as they should, and much fewer overseers. Fortunate is he, who can obtain and keep one who will faithfully do this. Both modest and heroic was the reply of the gallant Gen. Miller, when asked if he could achieve a certain military exploit, "I will try, sir." In these *mot-to-loving* days, this should be the motto of every farmer

I should undertake to say much about *them*. It is, perhaps, my duty, however, to say that I have found a remedy for the evil, then complained of, which is simply to provide the sows with the greatest possible variety of food; and also, to furnish them, by way of condiment, occasionally, a little salt, sulphur, rotten wood, charcoal, shop-cinders, &c. I now believe, if you will permit me to boast a little on this subject, that I have as fine a parcel of young hogs, the offspring of the self-same sows, so much abused in the spring, as can be found in the country.

If we ever succeed in raising hogs profitably, it must be on other kinds of food than dry corn. I do not believe it could be done on the old Virginia plan, in the richest regions of the west.

Permit me, gentlemen, in conclusion, to tender you my best wishes, and once more to urge, that we earnestly endeavor to make the society as useful as possible, and especially to make it a bond of union among ourselves, which the corrosive feelings of discord shall never be able to dissolve; and among those around us, a nucleus of love, which, like a "little heaven," may exert its softening influences far beyond the place of its origin.

#### AGRICULTURAL MEETINGS AND DISCUSSIONS.

An excellent practice, for the advancement of agricultural information, has been introduced in Massachusetts, and which we should rejoice to have copied and properly carried through, in Virginia and other southern states. We allude to the meetings of agriculturists which are held weekly during the winter in Boston, brought together merely upon the request and general invitation of the State Agricultural Commissioner, and by the voluntary action of the farmers who choose to attend, whether as auditors only, or to participate in the discussion, and to furnish their share, as well as to receive benefit from the information elicited from others. The agricultural commissioner (the Rev. Henry Colman,) designates and gives previous notice of the subject for discussion, and on which verbal information is desired at the next approaching meeting; and he presides at the meeting, or at least, so far leads in the proceedings, as to put the body to work. There seems to be nothing more of form, and no constraint, except, of course, such as is necessary to preserve order in debate. There are neither essays nor addresses, nor formal speeches delivered. Each member, as in common and unreserved conversation, and at such length as is requisite, and in plain language, states his opinions or his practice, and answers any questions or objections that may be put; and, in this manner, it may be, presumed that all the

and overseer in the land. We could then do much more good to our country, than by being all rabid partisans in *politics*, which might safely be trusted to our blessed representative system.

light is drawn forth that the individuals present can furnish. An essential member is a reporter to note the material facts and opinions stated by each individual, for subsequent publication. For this, there is no difficulty in Boston, as there are there, besides the commissioner, no less than three editors of agricultural papers, who participate in the discussions, and all of whom report the proceedings.

We have frequently, heretofore, republished extracts from the proceedings of these meetings, and shall present the report of the last, to follow these remarks, as a sample of the usual procedure.

It would be a capital addition to all that is now done by our existing agricultural societies, to hold, and report for publication, discussions of this description. There is not one society, (even though the most silent and therefore the most inefficient heretofore,) of which there are not sundry members, whose opinions and facts, thus expressed, would be highly interesting and useful to their brother agriculturists in general. We earnestly urge upon each and all these societies to adopt this course, for at least one meeting in each year, and in addition to, (and by no means in substitution of,) any useful labors heretofore performed by them.

But such meetings are peculiarly appropriate, and likely to be most beneficial, at the seat of government, and during the session of the legislature. The number of agriculturists there present, both members of the legislative body and others, though residing and farming in remote districts, would add much to the variety and value of the subjects treated, and to the interest of the proceedings.

An agricultural and horticultural society for Henrico, has been just formed, of agriculturists principally laboring in the vicinity of Richmond; and under auspices and direction from which we hope for much better results than the ordinary course of agricultural societies in Virginia. The formation of this society offers excellent means to introduce easily such agricultural meetings and discussions as are above recommended; and the society, acting in concert with any number of voluntary and temporary assistants and auditors, might hold meetings in Richmond, frequently during the winter, to very great advantage. We shall place this article in the hands of the officers of that society, as early as possible. If they should think it advisable to act upon the suggestion, we will be glad to take part in their free and informal discussions, and to report all useful doings of such meetings through the Farmers' Register. We know that there are members of that recently

formed society, who, though they have never written any thing for our pages (and perhaps never will for any publication,) as practical and successful cultivators, possess knowledge, which well deserves being made known to the agricultural public. If these persons (as is the case with the far greater number of the good farmers of the whole country,) cannot be induced to write their facts and opinions for publication, let us endeavor to draw them forth in free conversation. And if there is any attempt for this purpose, we farther take the liberty of urging the society (on these occasions, at least,) to avoid all regularly prepared addresses, which are, in most cases, merely essays on agricultural things in general, and on nothing particular, and of no use and no effect, except as substitutes for, and dampers to repress and extinguish, all other and more useful efforts.—ED. F. R.

#### *Second Agricultural Meeting at the State House.*

On Thursday evening last, the organization of the meeting was completed by the choice of  
Hon. Daniel P. King, of Danvers, *President*.  
Allen Putnam, of Danvers, *Secretary*.

*Committee of Arrangements.*—William Lincoln, Worcester; Horace Collamore, Pembroke; Cornelius Delano, Northampton; Calvin Cooley, Hawley; John Prince, Roxbury; Andrew Dodge, Wenham; Asa G. Sheldon, Wilmington; Hon. Isaac Hill, Ed. Monthly Visitor; Mr. Buckminster, Ed. Boston Cultivator; Mr. Cole, Ed. Yankee Farmer; and the president and secretary, *ex officio*.

Subject for discussion, as previously announced was *the Cultivated Grasses*.

Mr. Colman, Agricultural Commissioner, stated that there are more than 600 such grasses, but that he should confine his remarks to a few of the more common. Herds grass or timothy yields well; two tons to the acre is a good crop, though four tons have been obtained; it is an enduring grass, lasting 6 or 7 years, after which period it is best to turn the sod; cattle are fond of it. Would sow 12 bushel seed to the acre; no harm in sowing more; when thick the hay is finer; moist but not wet soil best suited to it. According to chemical analysis it is most nutritious if suffered to ripen before it is cut, though our animals like it better when cut young.

There are two kinds of Dutch clover, northern and southern, differing in the time of their ripening. The broad leaves take much nourishment from the atmosphere, and the tap root when it decays furnishes nutriment to the other grasses. It ameliorates the soil. As food for stock it is inferior when cured in the common method, i. e. when allowed to become nearly ripe before cutting and then dried thoroughly in the sun. Some practical men maintain that if cut younger and made in cock, its quality as food is as good as the other grasses. The southern, though less productive than the northern, is to be preferred; makes better hay; should be sowed in winter or spring and not in autumn. It is valuable as a green crop to turn in; if it be rank, roll and harrow before ploughing, and then it can be easily

turned under. Should it be *green* or *dry* when turned in? The field of one man who tried it in both states, indicates that the dry is best: 4 to 6 lbs. of seed to the acre. There is one objection to it as pasturage; horses are salivated or made to slaver by its use.

Red-top is as good as any grass; good for milch cows and horses; requires a soil that is *not wet*: 3 to 4 pecks of seed to the acre. Orchard grass grows quick; can be cut frequently; is sweet; the cattle relish it. Lucerne is good for soiling; may be cut 4, 5 or 6 times a year. Must be tilled the first year or the weeds will kill it; lasts 8 or 10 years. A small plot may be cultivated to advantage; will not do on wet soil; from 16 to 18 lbs. of seed to the acre.

Gypsum, as a top-dressing, 1 bushel or 1-2 bushel to the acre, once in two or three years, is in many places very serviceable. Is not fully satisfied as to the utility of lime. Saltpetre has been used to great advantage. Wood ashes are good, but in great quantities will cause moss to grow, particularly in moist or wet lands; peat ashes will do the same. Eel grass, kelp, rock-weed and salt hay are good top-dressings.

Mr. Buckminster, Editor of the *Cultivator*, agreed with Mr. C. in most respects, yet differed from him in a few points. Thought clover, pound for pound, as good as herds grass; recommended sowing them together; and cutting so early that the clover *stalks* (the principal part) should be good fodder. Clover, no doubt, is a good crop to plough in, but the difficulty is to get crop enough to be worth ploughing in. Buckwheat will answer better for this purpose on poor lands; he doubted whether it is well to let the crop dry before it is turned under. Was in favor of cutting English grasses young, but thought that our wet meadow grasses were worth more if not cut until they were ripe. Had sometimes sown hay seed among corn at *hilling time* (no hill made) and found it to do well.

The Editor of this paper had never heard before that clover would *salivate* the horse. On one side of his father's farm the horses found nothing that produced this effect, though clover was often eaten by them there: on the other side lobelia grows, and there the slobbers or slavers are produced. He stated one or two facts from which he was inclined to infer that clover hay was better than red-top for producing milk. Also, he gave an account of the sowing of hay seed among corn; the substance of which may be found in No. xxviii. of the present volume of the *N. E. Farmer*.

Mr. Collamore, of Pembroke, stated that by the application of compost top-dressings in the *spring*, he had sometimes (in dry seasons) done more harm than good; has found it best to apply them in the autumn. Sea weed he thinks not valuable; but kelp and rock weed are. Ashes should be spread on sandy loam. Lime is sometimes serviceable; it should be used in compost.

Mr. Cole, of the *Yankee Farmer*, expressed the opinion that the salivation of the horse might be produced by something else than either clover or lobelia. The remainder of his remarks we do not retain; but as the meeting adjourned while he had the floor and as the same subject will come up at the next meeting, we hope then to preserve what he may offer.

#### BERKSHIRES NO LONGER BERKSHIRES.

From the Farmer's Cabinet.

*Mr. Editor*—I am an old hog-breeder, and have always supposed that I knew a thing or two, but I confess that I am now all at sea on that subject. The time was when a good hog was not measured by the number of white feet which he possessed, or the quantity of white hair that he sported in his tail, but by something of much more importance: I find, however, we were all wrong—no Berkshire can be a Berkshire with less than three white feet and a white top to his tail—"so says the book, and therefore it is true."

Now, I have observed, through a long life, the truth of an old aphorism, which I used to write, as a copy, when a boy at school—"what is violent is seldom permanent"—and the Merino, the morus, and now the Berkshire mania, all are proofs of the truth of the old adage; they have all been too violent to be permanent, and should be held in remembrance, as a warning against future speculations.

Well, then, Berkshires are no longer Berkshires, but *improved* Berkshires! So they can now be black, red, tawny, white, spotted and speckled, and yet be quite pure and perfect blood—in short, *improved Berkshires*—leaving the old breed quite out of the question—then I would say that Benjamin Cooper, of Camden, N. J., has about the best hogs in this country, and they deserve the character which J. G. has given them in page 382, vol. 4, of the *Cabinet*, the perusal of which account induced me to go and view them for myself.

It is a pity the game is likely so soon to be brought to a close; for I have half-a-dozen young friends, who were just ready to dash into the speculation, each prepared with his *Bement* or *Lus-sing*, and a pedigree as long as my arm, and all of the right color too, to a hair; but Mr. Samuel D. Martin's letter, in the *Franklin Farmer*, has, or I am much mistaken, blown up the Berkomania, and will quite spoil the trade. He admits that the genuine Berkshires were red, with black spots—indeed, that is undeniable—but he contends—which is *as deniable*—that they were a coarse hog, with large ears and curly hair, a great consumer, but that would attain a large size, (now what on earth was there in such a hog desirable to breed from?) and, therefore, he would make it appear, that every good quality of the present improved breed was obtained from the Eastern or Chinese hog, of which there were two varieties of colors, the white and the black. Professor Low, however, contends that the color of the *modern* Berkshire is still a reddish brown, with dark spots; many of them, he says, are nearly black, manifesting their near approach to the Siamese character, and sometimes they are black, broken with white, but not a word does he say of their being quite white; although he admits that from this intermixture it becomes, in many cases, difficult to recognize, in the present race, the characters of the true Berkshire—and yet Mr. Martin has a white imported boar, of the *improved* Berkshire breed, although he does not claim for him that he is an original Berkshire, but that he is an *improvement* upon that breed, by the eastern crosser. But all this while Messrs. Lossing and Wait attach great importance to their pigs' coming

direct from Berkshire, and of being the *only* pure blood, although they have never imported, by any chance, any of the original red and black color; and they brand all those with contempt that are not black and white, with the given number of white feet and white hairs in the tail.

But Mr. Martin says, although red and black was the original, and has always been the prevailing color, of the real Berkshire hog, yet, *thirty years ago*, there were white and black ones amongst them, (he must then mean, I presume, amongst the original breed,) and that he considers it, therefore, perfectly idle to say, that in an animal that is white and black, a few hairs of the one or the other color, in this or that place, constitute a genuine or a counterfeit—and so say I—but this is robbing the milk of all the cream, for, as I have often seen, much more importance has been attached to their color, than to any other qualification.

So then, it appears that every one has been breeding his own *improved* Berkshires! And that, in short, Berkshires are no longer Berkshires! I shall, therefore, no longer expect to see people shelling out their dollars for very inferior pigs, merely because they have been bred by such and such gentlemen, without regard to much besides the color of the feet and tail! And it comes at last to this—a good hog, any more than a good cow, cannot be of a bad color.

Let it not, however, for a moment be supposed that I wish to detract an iota from the value of the Berkshires—they are most excellent as a cross with our own swine-stock, and have done, and will do, infinite good; but, really, the nonsense which is bandied about in all sorts of ways and all about things of the most trifling importance, is perfectly surfeiting, and reminds one of the old couplet,

"Strange, that such difference there should be  
'Twixt tweedle-um and tweedle-dee!"

JOHN DILLON.

#### ROHAN POTATOES.

From the Boston Cultivator.

Dracut, Nov. 18, 1840.

**Mr. Editor**—Having heard much said respecting the Rohan potatoes, their extraordinary producing, &c., I will endeavor to state some facts, from what experience I have had the past season. And should you deem them worthy of notice, have no objection to their being published in the Cultivator. And I should like to hear from others who have fairly tried the experiment. The Rohan potatoes unquestionably excel all others in size, as it is not uncommon for them to weigh two and a half, and even three pounds each. But this is no very great encouragement to raise them if they will not produce any more in weight or measure from a given quantity of land. I have tried the experiment fairly, without prejudice, and am well satisfied that they will not produce so much from the same ground, as the long reds. And no one, I think, will deny that they are sufficiently large for convenience; and I think their quality much better.

In the first place, I prepared the ground in the

best possible manner, for a large crop, manuring it very highly. The potatoes were planted in drills, at a distance of about three and a half feet apart. The piece of ground measured something more than one fourth of an acre, and was planted with Rohans, with the exception of ten rows, for the experiment. These rows were short, only a little over five rods in length. The two first rows next the Rohans were planted with long reds, precisely the same as the Rohans; that is, the potatoes cut into as many pieces as there were eyes in them, the pieces being planted at a distance of about one foot from each other.

When they were dug, I found the Rohans produced three and one fourth bushels to a row, and the long reds three and one half, as near as they could be measured. The next two rows were long reds, planted as we usually plant them, that is, a common sized potato cut into four pieces, but planted the same distance apart as the Rohans. These, when dug, produced a little over four bushels to a row. The next two rows were planted with the common blues, as the Rohans. These produced about two and one half bushels to a row. The rest of the rows were planted with blues, as we usually plant them; they produced a little over two and three fourth bushels to a row; not so much as the reds or Rohans. Last year many tried the experiment, to see how many they could raise from a small quantity, and were surprised at the enormous quantity thus obtained; but when we take into consideration the attention we generally pay to any new thing that we get it is not very wonderful. When we get any thing new, we are very sure to plant it on the very best land, and take the best care of it. Last year I planted one pound of Rohans, and raised from that pound two and one fourth bushels. To be sure it took but a very small piece of ground to plant them, but they actually occupied a much larger piece of ground; the stalks growing from six to seven feet in length. Thus we see the experiment cannot fairly be tried in this way. What is your opinion, Mr. Editor?

Yours, &c.,

J. B. V. C.

We have long entertained doubts about the great stories which have been told of the Rohan potato, and we have freely published the opinions of other farmers, since they have given it a trial. Some soils may suit the Rohan better than the long red, and we may well suppose that in these soils the Rohan will produce most; but we seldom see a fair trial of a new vegetable.

In regard to potatoes, the question is, not how many pounds may be raised from one, but how many pounds or bushels we can raise *on the acre*. One kernel of corn will often produce several hundreds—but we choose to inquire how much can be produced on a certain quantity of ground.

There are many good kinds of potato in the country, but for ourselves we prefer the long reds, sometimes called long johns. When these are planted in good season, and allowed to remain in the ground till they are ripe, they are excellent even in the fall; and in the spring they retain their goodness longer than any we have tried.—**ED. BOSTON CULTIVATOR.**

## RAISING PORK.

From the Southern Cultivator.

The raising and fattening of hogs, when good breeds are employed, is considered a very profitable business in the state of Kentucky. Two methods are practised in raising the pigs with us, both of which are thought best by those who follow them.

I will detail both methods. One plan is, never to suffer the sows to breed but once; for this purpose, a particular number (say fifty) of sow pigs, pigged in March or April, are selected, and one boar pig of the same age for every eight sows. These are separated when two or three months old, and the boars kept by themselves. The boars and sows should not be related, on which account it is best to buy the boars or exchange with a neighbor. The pigs are all to be kept well, but the sows are not to be made too fat. About the 10th of December, the boars and sows are put together, and after all the sows are served the boars are castrated. The pigs will come in April. The sows, a short time before pigging, are separated, so as to have but few together, and shelters are provided sufficient for half the number of sows. Some have as many shelters as sows. These shelters are frequently made by laying a rail in a fence corner, and covering it with boards, straw or corn-stalk fodder. During the time of having pigs, the sows should have free access to plenty of water, and a careful person provided to attend to them; five or six pigs are allowed to each sow, and two sows to stay together until the pigs learn to distinguish their mothers. Some keep each sow by herself. After ten days or two weeks, each pig will have learned to know its mother, and the sows are then turned into a large lot, and fed freely whilst suckling their pigs; when they are six or eight weeks old, the old sows are spayed, and another selection made of the best sow pigs for breeders. The boar pigs not intended for use should be altered, and the sow sows spayed, when eight or ten weeks old. They should be well fed until old enough to turn on clover; and after they are turned on clover, a little corn every day is very advantageous. About the 1st of July they are turned into the rye-field and have also the gleanings of the wheat and oat fields.

The other plan, which is most practised where I live, (Clark county, Kentucky,) is to select the best sows and keep them as breeders as long as we find them profitable; and when they become unprofitable, kill them for pork or spay them and fatten them for sale, and supply their places with young ones. These are bred twice a year, in December and June. Some prefer breeding in October or November, for though from cool weather they may not save as many pigs, they will make their meat of those pigged in February and March that fall, and so save the wintering.

The advantage of the first plan is, that the hogs sold are nearer of an age and size; and having all the pigs at once, they will be of sufficient age to go through the next winter better, and are not as liable to be overlaid by larger ones. It is also much less trouble to attend to sows all having their pigs at once than at different times. The disadvantages are, killing those sows that are good breeders, and having a new set of sows

every spring. Every person who has attended to the subject, knows that some sows are much better breeders than others, and that some are also better nurses.

In either case, it is important, where many sows are kept, to keep the sows from collecting in cold weather in large companies, as they are very apt to mash each other so as to make them miscarry.

Pigs that come in February or March, may be made to weigh from 200 to 250 pounds net meat, in the November following, if the boar be of the best improved breeds.

Where many sows run together, when they have pigs, some of the stronger ones frequently take the teat of the weaker ones, and starve them. This can be prevented by separating them.

Very few of our farmers either grind or cook the corn fed to their sows or pigs. From an experiment I made last spring, I am convinced that the pigs would be greatly benefited by having their feed made into mush.

SAM'L. D. MARTIN.

Colbyville, Ky., Dec. 8, 1840.

## POOLS FOR WATER—ROTTING HEMP.

From the Kentucky Farmer.

Danville, Ky. 29th Dec., 1840.

Mr. Brown.—The encouragement given in your paper to the hemp growers of Kentucky, has determined me to try the experiment of water rotting my next crop of hemp. Mr. Myerle's account of the process is complete, except telling how the pools are constructed, he gives the dimensions without telling the material with which the pools are encased.

Will you please tell through your paper the best manner of constructing the pools, or the plan that Myerle has adopted.

Yours, most respectfully,

W. W. McDOWELL.

In answer to the inquiries of the above letter, it is only necessary to say that in all the pools which have been constructed this season, no casing has been used. The ground being found sufficiently impervious to retain the amount of water necessary to the process. The most ordinary invention can suggest the size, number, arrangement and locality of pools best suited to each cultivator's peculiar circumstances. Considering alone the convenience of filling and employing the pools, the best locality would be near a spring or branch; if a spring be chosen, they should be placed at such a distance as will prevent the backing of the water into the spring from the pools when full. If a branch be chosen the same result may be effected by raising a slight head in the stream by a temporary dam. A very slight fall should be given to the bottom of the roof, that if possible it may be sufficiently above the water of the branch or outlet of the spring to insure a perfect drainage when the pools are desired to be empty. A gentle current of water is decidedly advantageous. Mr. Myerle advises that the size of the pools be made 20 feet by 40—but if necessary to give a sufficient fall to drain them they may be longer and narrower. If more than one

is needed they may be constructed so that one may receive the surplus water of the other. To prevent caving give the sides a slope at 45°. Each pool should have a gate at each end to control the entrance and escape of the water, and closing the upper should turn the water from the pools into its natural channel, and opening the low ones, drain the pools. It is useless to add more as we have said the construction necessary is so simple any man may plan them to suit his peculiar situation. See Mr. Myerle's publication.

ON THE USE OF QUICK-LIME ON SILK-WORMS,  
TO PREVENT DISEASE.

Translated from the 'Propagateur,' for the Silk Journal.

"Crest, (Drome,) Jan. 1840."

"To the Director:—"I had promised you some observations, made during many consecutive years, upon the contagion of the muscardine; but these observations would be superfluous after the excellent article on this subject furnished by M. Bézard. The contagion is a fact too positive to be doubted, and if some persons still contest the point, it is because they have not taken the pains to assure themselves of the truth. I will undertake to communicate the contagion to any worms that may be presented to me, even though they may be upon the point of forming their cocoons. The principle of contagion being established, it remains for us to discover the means of preventing it, and if possible of curing the disease after it has appeared; and I do not hesitate to say that such a discovery would be the most valuable present that could be made to those engaged in the silk culture. Preventive means are in fact insufficient in many instances, as I have been taught by sad experience during the past season. I was perfectly successful in 1837. There were no *muscardines*, or almost none;—about twenty in the whole course of the rearing. Notwithstanding that, as I had suffered considerably the year before. I caused the walls, the ceiling, and the floor of my laboratory to be white-washed anew. The shelves, the ladders and all the utensils were washed in caustic lie, and the eggs were disinfected. I commenced my rearing of 1838, under the most favorable auspices; my worms were superb, and every thing led me to hope for the most complete success. When, in the fourth age, the disease manifested itself. Its progress, although slow up to the time of mounting, soon induced me to predict what happened: I had no harvest. I must confess that I did but little in the way of combatting the disease. I had tried in vain the washing of the leaves in a solution of potash, as recommended by M. Baesi; and the immersion of the worms in this solution was attended with no better success. I contented myself with hastening the maturity of the worms, and keeping the air constantly renewed. The two last ages were spent almost in the open air, the thermometer standing at 17°, and the hygrometer at 68°. I should not omit in this place the mentioning of a curious fact, viz.: that the mortality was always greater during the prevalence of northerly

winds, than when the wind blew from the south.

"From what has just been stated, it will be seen that it is by no means sufficient to take a few precautions such as I have mentioned, since all the preventives imaginable could not secure me from becoming the victim of this terrible scourge of our laboratories in 1838. How precious then would be the specific which would not only present an effectual barrier to the irruption of the diseases, but would also be sufficiently powerful to arrest it after its introduction! The success with which the *smut* in wheat has been attacked by the sulphate of copper, (blue vitriol,) has suggested to M. Bézard, the happy thought of combatting the muscardine by the same means. M. Gaudibert-Barret, of Carpentras, has suggested the use of *lime*, and his testimony is of great importance, since he has not found a single *muscardine* in his laboratory during the ten years that he has been in the habit of applying it, though his neighbors have been often attacked. I adopted his practice last summer, and the result has surpassed my most sanguine expectations. I will give you a brief account of my experiment.

"Notwithstanding the precautions which I had taken, I was observing the course of my rearing with some anxiety, when, after the second moulting, the muscardine broke out with great violence. I thought at once of the lime, and wrote to M. Gaudibert-Barret, who had the kindness to furnish me with all the information I wanted. He told me that the quantity of lime used would render the litter unfit to be fed to cattle.\* This caused me to hesitate somewhat, as I did not feel willing to spoil the litter. The mortality continuing, however, I at last sent for the lime and proceeded to apply it. My worms had finished their third moulting, and were entering upon their fourth age. I had no expectation that the disease would cease instantaneously, and, in fact during the fourth age I discovered nearly the same number of muscardines each day; only the disease did not increase, and on this account I kept up my spirits and went on to apply the lime twice a day. The fourth moulting took place. I limed the worms before and after their sleep, and on clearing away the litter, I had the satisfaction to perceive that the disease had almost entirely disappeared, since I did not find more than two dead worms, at most, to each table of thirty-six square feet of surface, I continued the liming, at least twice a day, up to the time of mounting, and the consequence was that my cocoons were superior both in quantity and quality to any that I have ever produced. The report spread abroad that I was covering my worms with lime, and I had numerous visitors. One of my neighbors, among others, came to see the experiment. His worms were hatched the same day that mine were, and were attacked with the muscardine about the same time. I pressed him to use the lime, assuring him, and indeed demonstrating the fact, that the process could not in any case injure the worms. He appeared to be convinced, promised that he would attend to it, went away—and did nothing. Well, what happened? His failure has been as signal as my success. This, my dear sir, has appeared to me to be a very strong

\* There are several allusions made in the 'Propagateur' to feeding hogs, &c., with the litter from the hurdles.

\* Reaumur.

proof, and I shall wait with a good deal of impatience for the opportunity of making another experiment. Of what immense importance would be such a discovery which would assure us the whole of a crop of which we cannot now calculate upon receiving more than one-half, unless we have more than an average share of good luck.\*

"In addition to what has been stated above, I must not forget to mention that the litter upon which the lime had been thrown was fed away to hogs as heretofore, and that they were not at all incommoded by it. I used as much as three quintals of lime to seven ounces and a half of seed, [eggs,] and I must confess that after having been so liberal with it I had given up all thoughts of deriving any advantage from the litter, an advantage which is by no means unimportant in our southern establishment. I soon perceived, however, that the greater portion of the powdered lime disappeared while the litter was drying, and provided it was well shaken before it was given to the hogs, it became nearly clean. As to the excrementitious matter, it remains white, but the experience of five months has convinced me that it may be eaten without the least danger to the animals. There is then every thing to hope and nothing to fear. FAWRE-BIGUET."

*M. Amans Carrier.*

#### RUTA BAGAS.

From the New England Farmer.

*Mr. Editor*—In the summer of 1839, I sowed 3.4 of an acre of ground with ruta bagas and 1.4 of an acre adjoining with Dale's hybrid. The ground was all prepared alike and the seed sown on the same day. They all came up well, and in the early part of the season Dale's turnip grew more rapidly than the ruta bagas, and promised an abundant crop. But when the roots had attained the size of my finger, they began to rot; and I believed I had not a turnip on the piece worth pulling. None of the ruta bagas died. I concluded that Dale's turnip was a less certain crop than the others, and that I would try no more of them.

About the 25th of June last, I sowed half an acre with ruta bagas. They came up well; but by the time the roots were 1.4 of an inch in diameter, I found they were dying. I did not examine them particularly for some days; or, perhaps, weeks, after I made the discovery. When I did examine them, however, I found they were rotting in the middle, and when the rot had reached the outside of the root, the top died. On many which were not dead, I found a small puncture on the side, and on cutting the root open, I found it had been eaten hollow near the top. On pulling up and closely inspecting a large number of them, I found in two or three a small white maggot, about the size of the largest we see in cheese.

In pulling my crop, which though a light one

\* This is an important consideration to the American silk-culturist, since the loss which Europeans sustain from the muscardine alone, is here seen to be more than sufficient to counterbalance the disadvantage of our high-priced labor.

was not an entire failure, I found many of the turnips, which had grown to a good size, were hollow; and many of them were quite defective. All the crops of ruta bagas which I have noticed in this quarter this season were rather light.

Now, Mr. Editor, I wish to know whether it is common for ruta bagas to suffer from this kind of worm; and if so, whether there be any remedy? Or is my disappointment owing to some mistake of mine? That this question may be answered I will state my management and the manner the ground had been previously treated. The soil is a sandy loam. In the spring of 1838 it was covered with a strong sward, which was ploughed in for corn, after being well manured from the barn. In the fall, lime was applied at the rate of eight casks to the acre. In the spring of 1839 it was again manured from the barn and ploughed for mulberry trees. Twenty-five or thirty loads of compost, made of stable manure, loam and lime, to the acre were covered in the furrow with the trees. Before hoeing, a top-dressing of 25 bushels of crushed bone and 25 bushels of leached ashes was applied to the acre. And as I was desirous of getting a large growth, after hoeing I added 25 bushels of poudrette to the acre. In the summer, I sowed common turnips, between the rows. The crop this year showed that the land was in good condition.

In the spring of 1840, the land was ploughed and lay in the furrow till the time of sowing ruta bagas, when it was harrowed, ploughed a second time and then harrowed well. Light furrows were then opened with a horse plough, a dressing of bone manure was put in the furrows and slightly covered with dust, when the seed was sown in the furrows, by means of a drill barrow.

If you, Mr. Editor, or any of your correspondents, can tell me the cause of my failure, and the remedy, (if any,) I shall be highly gratified. I think more light may be elicited by farmers publishing their failures, than by their publishing their success.

R. R. P.

*Manchester, Ct., Jan. 7, 1841.*

[We have seen crops of ruta baga similarly affected. Have conjectured causes. Sometimes the question with us has been, whether the evil were not caused by the use of unfermented manure in the drills; and at other times we have asked whether it were not early sowing. R. R. P. has here shown that the cause must be different from either of these. He is entitled to thanks for "publishing his failures," and we would aid him to a solution of his difficulties were it in our power; but we can only join him in a request that some one will give the needed information. We will simply ask whether he or any one else has ever seen a crop suffer in this way, excepting upon free or light soils and those highly manured. On tenacious and moist lands, and upon sward land we do not recollect ever witnessing such failures.

The inquiry relative to Mr. Ingersoll's piggery accompanying the above communication we have not published, because we are led to believe that the communication referred to, once made in these columns, was never worthy of credit (we know not from whom it came,) and because the gentlemen is not now in this vicinity.—E. N. E. FARMER.

## POPULATION STATISTICS.

From the Journal of Commerce.

We annex a comparative view of the Census of the United States at the several enumerations taken by order of the general government from 1790 to 1840. The increase of population since 1830, is at least *four millions*. The present population of the United States is very little short of SEVENTEEN MILLIONS.

States.	1790.	1800.	1810.	1820.	1830.	1840.
Maine,	96,540	151,719	228,705	298,33	399,955	501,796
N. Hampshire,	141,899	193,762	214,360	244,161	269,328	284,481
Vermont,	85,416	154,465	217,713	235,764	280,652	291,848
Massachusetts,	378,717	428,245	412,040	523,287	610,408	737,466
Rhode Island,	69,110	69,122	77,031	83,059	97,199	108,837
Connecticut,	238,141	251,002	262,042	275,202	297,665	310,023
New York,	340,120	586,756	959,949	1,372,812	1,915,608	2,432,835
New Jersey,	184,139	211,949	249,555	277,575	320,823	372,352
Pennsylvania,	434,373	602,365	810,091	1,040,458	1,348,233	§1,669,717
Delaware,	59,098	64,273	72,671	72,749	76,748	78,120
Maryland,	319,728	341,548	380,546	407,350	447,040	467,228
Virginia,	745,808	880,200	974,822	1,065,379	1,211,405	1,231,444
North Carolina,	393,751	478,103	555,500	638,829	737,987	753,110
South Carolina,	249,073	345,591	415,115	502,741	581,185	594,439
Georgia,	62,548	162,101	252,433	340,987	516,823	*619,164
Alabama,			20,845	127,901	309,527	†479,449
Mississippi,		8,850	40,352	75,448	136,621	376,099
Louisiana,			76,556	153,407	215,739	‡249,638
Tennessee,	35,791	105,602	261,727	422,813	681,904 (a)	823,067
Kentucky,	73,077	220,955	406,511	564,317	687,917	
Ohio,		45,365	230,760	581,434	937,903	1,515,695
Indiana,		4,875	24,520	147,178	343,031	683,314
Illinois,			12,282	55,211	157,455	423,933
Missouri,			20,845	66,586	140,445 (c)	327,734
Michigan,			4,762	8,896	31,639	211,705
Arkansas,				14,273	30,388	94,912
Dis. Columbia,		14,093	24,023	33,039	39,834	43,712
Fl. Territory,					34,730	
Wisconsin Ter.						30,692
Iowa Territory,						43,035
Total,	3,929,827	5,305,925	7,239,814	9,638,131	12,866,920	15,755,843

*White population.*

	In 1840.	In 1830.	Increase.	Ohio,	1,498,593	926,311	572,282
Maine,	500,443	398,260	102,183	Indiana,	676,296	339,399	336,897
N. Hampshire,	383,951	268,721	15,230	Illinois,	423,330	155,061	268,269
Vermont,	291,130	279,776	11,354	Missouri,	277,357	114,795	162,562
Massachusetts,	728,932	603,359	125,573	Michigan,	211,001	‡1,346	179,655
R. Island,	105,593	93,621	11,972	Arkansas,	75,512	25,671	49,841
Connecticut,	301,858	289,603	12,255	Dist. Columbia,	30,657	27,563	3,094
New York,	2,382,571	1,874,287	508,384	Fl. Territory,			
New Jersey,	350,724	300,266	50,458	Wisconsin Ter.	30,506		30,506
Pennsylvania,	1,619,115	1,309,990	309,215	Iowa Ter.	42,864		42,864
Delaware,	58,581	57,601	981		18,256,429	9,994,396	3,262,033
Maryland,	315,571	291,108	24,463		9,994,396		
Virginia,	735,812	694,300	41,512	Increase,	3,262,033		
N. Carolina,	484,172	472,843	11,329				
S. Carolina,	269,002	257,863	1,139	<i>Free colored persons.</i>			
Georgia,	363,303	296,806	66,497	States.	1840.	1830.	Inc.
Alabama,	288,947	190,406	98,541	Maine,	1,353	1,171	182
Mississippi,	178,967	70,443	108,524	N. Hampshire,	529	602	73
Louisiana,	112,149	89,441	22,708	Vermont,	718	881	163
Tennessee,	629,492	535,746	93,746	Massachusetts,	8,534	7,045	1,489
Kentucky,				Rhode Island,	3,239	3,564	325
				Connecticut,	8,111	8,047	64
				New York,	50,261	44,869	5,392
				New Jersey,	20,970	18,303	2,667
				Pennsylvania,	50,571	37,930	12,641
				Delaware,	16,928	15,855	1,071
				Maryland,	61,938	52,938	9,000
				Virginia,	48,425	47,348	1,077
				N. Carolina,	22,752	19,543	3,209
				S. Carolina,	8,279	7,921	358

§ Bradford county and parts of Union and Luzerne not included.

\* Nine counties not received.

† Incomplete.

‡ Returns from the Western district not received.

(a.) Part of Monroe county not received.

(c.) Seven counties not returned according to law, and not included in this aggregate. It is supposed they have a population of about 50,000.





*Progress of the whole population.*

Year.	Number.	Increase.
1790.	3,929,927	
1800.	5,305,925	1,376,098 or 35.1 per cent.
1810.	7,239,814	1,933,889 " 36.3 "
1820.	9,638,131	2,398,317 " 33.1 "
1830.	12,866,920	3,228,789 " 33.5 "
1840. abt.	16,900,843	4,033,923 " 31.4 "

By an examination of these tables it will be seen that the white population has increased in a very uniform ratio from 1790 to the present time; the increase in no decade being less than 34 per cent. nor more than 36.1 per cent. The ratio of increase among the free colored people has been very fluctuating; but taking the colored population *en masse*, slaves and free, the fluctuation has been moderate down to 1830, and the average ratio of increase nearly as great as among the whites. But for some reason or other, (perhaps the abolitionists can explain it,) the ratio of increase for the last ten years, has been greatly reduced, among both free negroes and slaves. A few have gone to Texas and Canada, perhaps 30,000 in all, but this affords a very imperfect explanation of the phenomenon.

## CAUSES OF BAD CURRENCY.

From the Journal of Commerce.

It will turn out when the truth is known, that more money has been lost by banks within the last ten years, than the whole country would have sold for when our fathers fought the battles of independence; yet the fault is not in the banks, nor their directors. The wide spread ruin shows that the evil is not local nor particular, but universal. It is in the *system*. We have waged a great battle with the laws of trade, and we have been severely flogged for our folly.

All that is necessary is, that we should be convinced of our folly and leave currency to itself. It is the easiest thing to manage in all the departments of business. If congress will but make a bankrupt law, which shall compel all banks and all men to pay their debts or divide their effects, and then if congress and the state legislatures will just let the whole matter alone, there will grow up of itself the best currency in the world. What we want is, to get rid of a *system* and of regulation, so that every man shall act for himself and act freely. Then, whatever is wanted will be provided. If we want paper money accredited in all parts of the country, we shall have it. Then, if a banker fails, he will fall out of the ranks. Our suspensions grow out of the fact that our currency is managed by a great system. If one important wheel breaks, the whole system stops. Let currency become an individual matter, like other branches of business, and *suspensions would be impossible*. When we become wise enough to leave currency to take care of itself, after congress has discharged its constitutional duty of coining money and fixing the value thereof, then we shall have the safest and steadiest and every way the best currency, which the imperfect state of this world will admit.

From the Journal of the English Agricultural Society.

## AN ESSAY

On making compost heaps from liquids and other substances; written on the evidence of many years' experience. To which the prize of ten sovereigns was awarded. By James Dixon, Esq., Secretary to the Manchester Agricultural Society.

The force and power of an agriculturist to produce good crops mainly depend on the manures he can command; and how to derive the greatest possible benefits from his immediate resources is one of the most useful subjects that can engage his attention. The English Agricultural Society having offered a premium for the best mode of making compost heaps, I venture to forward the committee my ideas on this most important branch of rural management; and in doing this I shall state the course I have pursued in this particular for many years, and in which every additional experience inclines me not to make any systematic alteration.

My farm is a strong, retentive soil, on a substratum of ferruginous clay; and being many times disappointed in what I considered reasonable anticipations of good crops, I determined on a new system of manuring. Though quite satisfied of the expense which would necessarily be incurred by my plan, I still determined on its adoption. At the onset I effectually drained a considerable part of my farm. My next object was how to improve its texture at the least cost—(perhaps I may be allowed to state that my holding has always been at rack-rent); for this purpose we carted great quantities of fine sawdust and peat earth or bog; we had so far to go for the latter that two horses would fetch little more than three tons in one day—one horse would fetch three cart-loads of sawdust in the same time. Having brought great quantities of both peat and sawdust into my farm yard, I laid out for the bottom of a compost heap a space of considerable dimensions, and about three feet in depth: three fourths of this bottom was peat, the rest sawdust; on this we conveyed daily the dung from the cattle sheds, the urine also is conducted through channels to wells for its reception,—one on each side of the compost heap;—common water is entirely prevented from mixing with it. Every second day the urine so collected is thrown over the whole mass with a scoop, and at the same time we regulate the accumulated dung. This being continued for a week, another layer, nine inches or a foot thick, of peat and sawdust (and frequently peat without sawdust) is wheeled on the accumulated heap. These matters are continuously added to each other during winter, and in addition once in every week never less than 25 cwt., more frequently 50 cwt., of night-soil and urine; the latter are always laid next above the peat or bog earth, as we think it accelerates their decomposition. It is perhaps proper here to state that the peat is dug and exposed to the alternations of the weather for several months before it is brought to the heap for admixture; by this it loses much of its moisture. In some cases, peat contains acid or astringent matters, which are injurious to useful vegetation. On this I have not tried any decided experiment, but am led to the supposition by fre-

quently seeing stones some in a partial state, of decomposition, others wholly decomposed in bogs, and at the depth of several feet from the surface. Some years' experience has convinced me of the impropriety of using recently dug peat; proceeding in the manner I recommend, it is superior and more convenient on every account—very much lighter to cart to the farm-yard or any other situation where it is wanted; and so convinced am I of its utility in composts for every description of soil, except that of its own character, that wherever it can be laid down on a farm at less than 4s. per ton, I should recommend every agriculturist and horticulturist that can command it, even at the cost here stated, to give it a fair trial. So retentive and attractive of moisture is peat, that if liberally applied to any arid, sandy soil, that soil does not burn in a dry season; and it so much improves the texture and increases the produce of an obdurate clay soil, if in other respects rightly cultivated, that actual experience alone can fairly determine its value.

For the conveyance of night-soil and urine, we have the largest and strongest caeks, such as oils are imported in; the top of which is provided with a funnel to put the matters through, and the caeks are fixed on wheels like those of a common dungcart. For the convenience of emptying this carriage, the compost heaps are always lower at one end; the highest is where we discharge the contents, in order that they may in some degree spread themselves over the whole accumulation; the situation on which the wheels of these carriages stand while being discharged is raised considerably; this we find convenient, as the compost heap may be sloped six or seven feet high: low compost heaps, in my opinion, should be avoided. The plan here recommended I have carried on for some time. I find no difficulty in manuring my farm over once in two years; by this repetition I keep up the fertility of my land, and it never requires more than a moderate application of manure.

I am fully aware that there are many localities where neither peat nor night-soil can be readily obtained; but it is worth a farmer's while to go even more than twenty miles for the latter substance, provided he can have it without deterioration: the original cost is often trifling. On a farm where turnips or mangold are cultivated to some extent, the system here recommended will be almost incalculably advantageous; a single horse is sufficient for one carriage—mine hold upwards of a ton each; six tons of this manure in compost with peat, or, if that is not convenient, any other matters, such as ditch scourings, or high headlands which have been properly prepared and laid dry in a heap for some time, would be amply sufficient for an acre of turnips or mangold. This manure is by far the most invigorating of any I have ever yet tried; bones in any state will bear no comparison with it for any crop; but it must be remembered that I went on the supposition that it has not been reduced in strength before it is fetched.

Convenience frequently suggests that compost heaps should be raised on different parts of a farm; but, unless in particular instances, it is well to have them in the yard: in the farm-yard, all the urine from the cattle stalls may be employed with the greatest economy; and be it remarked

that the urine from animals, in given weights, is more powerful than their solid excrements.\* How important then must it be to the farmer to make the most extensive and the most careful use of this liquid. It is sometimes carted on the land, but that practice will not bear a comparison with making it into composts in the manner here recommended. Great waste is often made in putrescent manures after they are carted on the land; instead of being immediately covered or incorporated with the soil, we not unfrequently see them exposed for days together in the hot rays of a scorching sun, or to the injurious influences of a dry wind. I have before stated that compost heaps should on many considerations be raised in the farm-yard; still circumstances are frequently such that it is more proper to make them at some distance in the field. If a headland becomes too high by frequent ploughings or workings of the land, in that case it should be ploughed at the time when clover or mixed grass seeds are sown with a white crop, for instance, barley or oats, and clover for the year following: a headland might then be ploughed, and a number of cart-loads of some manure heaped from one end to the other. Immediately after this it should be trenched with the spade (or what is sometimes called digging,) and ridged high, in order that an action should take place between the soil and manure; by this means the mass would soon be in a condition for turning over, and any ditch scourings, or other matters which had not in the first instance been used, might now be added to the mixture. The heap should then be allowed to remain closed for a few weeks, then turned over again; at this turning, in all probability, the mass would be much reduced; if sufficiently reduced, raise the ridge of compost well on both sides, but, instead of its top being pointed, make a trench or cavity on the top from one end of the heap to the other. This cavity should be made tolerably retentive of moisture, which may be effected by treading with the feet; carriages of night soil, or urine from the cattle stalls, may then be emptied into the trench, and the bulk of the heap would determine how many were required; this being done, a little earth should be thrown into the trench, and the heap allowed to remain in that state until the middle or latter end of autumn; it will then be ready for another turning; but at this time care must be taken to have the heap well made up at the sides and pointed at the top; in this situation rain will be thrown off, and the compost preserved dry until winter presents some favorable opportunity for laying it on the young clover, wheat, or for making any other use of it which may be required.

The beneficial effects of top-dressing young clovers or mixed grass seeds is scarcely ever regarded with due attention. By this help crops are not only much increased, even 30 or 60 per cent., but they are also ready for cutting much sooner, which in a backward spring gives the stock farmer inestimable advantages for sorting his cattle, and thereby raising manure at his pleasure. The full effects of this practice I first experienced in the dry season of 1826: I had some clovers which had been manured the previous winter; my land

\* This must be taken with some limitations, for urine contains 90 to 95 per cent. of water; and unmixed dung contains all the salts of urine, besides much mucus and other substances.—W. L. RHAM.

was soon covered with crop, and that so vigorous a one, that the hot weather did not overpower it. My cows that summer were tied up during the day-time, and in the night they were turned out into the pastures; most of the stock in my district were much distressed from over-heat as well as from being short of food for some weeks; milk yielded little butter, scarcely any for a time was offered in our large market town:—no doubt that year will be remembered by many gentlemen on the Agricultural Society's committee. I, however, was under no difficulties on account of the season: my clovers produced plenty of food for my cattle, and in return they yielded as much milk and butter as I ever recollect from the same number. I am persuaded that the same satisfactory results would have followed if the same system had been adopted for feeding stock; it was that year my attention was first directed to raising compost heaps from urine. This I now do frequently without the help of any dung from the cattle-stalls; the same occasion called my mind to another matter well worthy every farmer's attention—I allude to the great superiority of the manure raised in summer soiling to that produced in the stalls during winter. I verily believe the difference is fifty per cent., unless stock are fed in a great measure during winter with artificial food. In an arrangement for making compost heaps from urine, I would recommend a receptacle to be made at the back of the cattle stalls just outside the building; this should hold about 20 cart-loads of mould, or any other matters to be employed; if its situation were a little lower than the cattle-sheds all the urine would pass into it, and remain there until the mass is completely saturated, which will be sufficient; when the earthy matters are covered over with it, the compost may then be thrown out and the proceeding again renewed. In order to show part of the benefits of this practice, I beg here to observe that the most foul or weedy mould may be used; the action of the urine, if not reduced by water is so powerful, that wire-worms, the black slug, many other destroying insects, and all vegetables, weeds, &c., when in contact with the urine for a time are deprived of their living functions. The situation for raising this compost should be protected from the weather by a covering similar to a cart-shed, indeed, the deteriorating influences of rain, sun, and arid winds, on all putrescent matters or compost are so serious, that in my humble judgment it would be worth while to have places under cover where these are usually laid down.

I beg to conclude this essay with some observations made on a former occasion. No amelioration connected with the rural art is of more lasting importance than correcting the constitutional defects of a soil. The best horticulturists and market-gardeners are many of them perhaps, unacquainted with the theory, yet perfectly understand the great results from that practice; and in this particular information they are all of them superior to many practical farmers. How often do we see a stiff soil sterile in a great degree from that cause only; yet, in the vicinity of a sandpit and adjoining most bogs there is a considerable breadth of coherent land, which might be made double its present value by judicious and liberal top-dressings of peat, which is also unproductive from causes of a contrary nature. The present poverty

of many extensive tracts of land is a manifest exhibition of the want of skill or enterprise of their owners and cultivators.

#### PROPOSED IMPORTATION OF SHEEP AND HOGS, AND REMARKS.

For the Farmers' Register.

*To Virginia Farmers.*—Whereas, I desire to obtain a few more blood sheep and hogs, and being satisfied that they can be obtained in England at better rates, and of better quality than at the north, I propose for this purpose, going to England in August next; provided other farmers will contribute so as to justify the expedition. Three or four thousand dollars would be sufficient, and perhaps a few spirited men would make up the sum. I am not particularly desirous of going myself; consequently if a better judge of stock, who may be interested in the adventure, and can give satisfactory references, will offer his service, then I thankully withdraw my name as agent.

Let the compensation be fixed at \$50 the month and expenses paid, and let the bills of sale be the price at which each shall receive his portion; no one to choose for himself, but all by lot. And let it be understood that only Cotswold and Lincolnshire sheep, and Berkshire hogs, are to be imported.

One cannot afford to go for a couple of sheep or a pair of pigs; consequently he sends, and generally gets what others refuse, and sometimes what nobody should have. Again—when we take pigs from the north at a few weeks old, they are put on food which perhaps they never before tasted, and consequently, the loss of milk, the new food, and transportation, make them runts; or if we buy thence grown stock, we always pay high grade prices, and generally get low grade animals. A sheep should not be moved a distance unless more than one year old; and for the sake of economy, perhaps imported hogs should be sows young with pig, and young boars.

In the November Cultivator we have a profile of a Co'swold buck, lately imported, which at eighteen months old, measured five feet two inches in length, and computed to weigh in net meat 180 pounds. In a previous Cultivator, we also see the profile of Mr. Clift's Lincolnshire buck, Nonesuch, measuring four feet seven and a half inches in length, but computed weight not given; we may know, however, that the Lincolnshires are very valuable, as Mr. Clift sells his bucks at \$50 to \$100, his ewes at about one-third less, and his wethers from \$20 to \$30. I have one of the sons of Nonesuch, now rising two years old, which bids fair to make a match for his sire, also many other fine sheep, yet am not satisfied, nor shall I be, until my flock may reach a weight of 100 to 180 pounds, and 6 to 12 pounds of wool.

In the December Cultivator, we read that Wm. P. Curd, Esq., of Kentucky, purchased 17 sows and 6 boars of the Berkshire and Irish grazier breeds; that in two years he had from them sold 110 pair of pigs at \$40 the pair, \$4,400; that 254 sows had been to his boars, (some from the distance of 200 miles,) at \$10 each, \$2,540; that he had taken in premiums 31 silver cups, making a total of \$7,000. But this is not all—for we also

read that he sold pork, to what amount is not stated; but let us suppose that the 17 sows in the two years produced 510 pigs, from which take 220 pigs sold, and we have 290 remaining for porkers; which, if weighing only 250 pounds each, gives 72,500 pounds of pork, which to a Virginian, would be worth \$4,350, and which added to \$7,000, gives a grand total of \$11,350. But let us suppose that none of the progeny were sold as pigs, but all made into pork, then we have 127,500 pounds, worth \$7,650, or \$3,825 the year, from 17 sows and say one boar.

Again, in the Complete Farmer, we read, that a pig at eight months old was driven to Danesburg and slaughtered, and weighed 311 pounds, and that many of the same age were nearly of the same weight. Now, whereas my hogs at eight months old, at best, would not weigh more than 150 pounds net, and although this weight would justify my slaughtering both fall and spring, yet I cannot, should not be satisfied. Are not the above exhibits enough to open the eyes and purses of the Virginia farmer? Are they not enough to convince him that it requires spirited men to do business?

As to the old breed of hogs, the case is nearly over with them; for although some are yet crying out, "I want the woods' hog," yet no one in his proper senses will much longer hold on to them. It is true, that some persons who have purchased, or thought they had purchased blooded hogs, have been disappointed by other means than those above enumerated; for they had been in the custom of giving their hogs daily about three grains of corn each, and supposed that by obtaining blood, they could get rid of a portion of this burthen; but as the scrub at a year old weighed as much as 60 pounds, and the blooded hog at the same age only 80 or 90 pounds, they considered themselves terribly humbugged.

As I do not profess to be a judge of horse or cow, I propose to import neither, nor do I care for them.

Persons desirous of contributing to the above purpose, are requested to give their names and amount either in the Farmers' Register, the Richmond Whig, the Lynchburg Republican, or the Lynchburg Virginian. And any person proposing to go to England, will give name and references through one of the same mediums.

The money will be wanting the last of July, and can be deposited either in Richmond, Petersburg, or Lynchburg, and the delivery of stock can be at Norfolk, Petersburg, Richmond, Columbia, Scottsville, New Market, and Lynchburg—but of this, more in time.

References.—Messrs. Cocke, Brown, Cabell, Dorman, Toler, and Kyle of the Virginia legislature; S. S. Baxter, (Attorney General,) Joseph Allen, (C. C. Appeals,) and Capt. John Goddin, city of Richmond; John Garth and James Fariss, Esqrs., and Rev. John N. Johnston, of Buchanan; Sundry persons of Lexington, Lynchburg, New Glasgow, Duquidville, New Market, Lovington, Charlottesville and Scottsville.

Editors of newspapers are requested to insert the above at least once, and charge to charity.

Z. A. DRUMMOND.

Amherst, Jan. 20th, 1841.

There is another good reason for carrying into

effect such a scheme as is proposed by Mr. Drummond, besides all that he has urged. Each of the best known breeders and salesmen of Berkshire pigs and other highly prized live-stock, has probably produced his sale animals from a single pair, or at any rate, from too small an original number, and by continuing to breed in-and-in, for successive generations. This course will certainly and greatly deteriorate any family of animals; in whatever cases it has been pursued, the original purity of blood (supposing it to have been the best at first,) is no guaranty against the purchaser being supplied from a feeble and worthless progeny. Against this very common and general source of bad stock, at the highest prices, the distant purchaser has no safeguard, but in the moderation and integrity of the stock-breeder and salesman. We ought to obtain new breeders, and enough in number to avoid breeding in-and-in; and this may be done by enough individuals, either separately or in partnership, uniting in the importation.—ED. F. R.

#### MANURING WITH PURCHASED MARL AND LIME.

For the Farmers' Register.

Essex, Va., Jan. 26th, 1841.

I have received all the back volumes of the Farmer's Register and had them bound, and look to them as a never-failing source of interest and improvement. I have been for the last two years using marl and shell and stone-lime to a very considerable extent for my means, and am pleased to say, that thus far, my expectations have been fully realized. The marl, of very superior quality, is brought from Urbanna, in Middlesex, and purchased by me at my landing for from 4 to 6 cents per bushel. Shells can sometimes be bought at from 90 to 100 cents per hoghead; and I buy all I can get at that rate; and by burning them with pocoson wood, cut by my hands in the winter season, when they would otherwise have nothing to do, I do not estimate the actual cost of the shell-lime to exceed 7 cents per bushel. The stone-lime I buy either in tierces or loose in the hold of the vessel; for the former (Thomaston,) I have paid \$1.25 a tierce, and for the latter, purchased at the kiln of E. J. Cooper, near Baltimore, I pay 12½ cents per bushel. It is a very expensive method of improvement, but I still hope the investment will prove profitable.

Yours, very respectfully,  
RICHARD BAYLOR.

#### CABBAGE WORMS.

From the Albany Cultivator.

A writer in the Southern Cultivator, says he "had a square of very fine cabbages in his garden upon which the worms had commenced making

great ravages. Pennyroyal was gathered and scattered over the cabbage-heads plentifully, and the work of destruction ceased." The writer did not know whether the discovery was a new one, but it seems to have been a very easy and effectual one, and well worth a trial.

#### EFFECTS OF THE STOCK ON GRAFTED FRUIT.

From the New Genesee Farmer.

A late number of the Yankee Farmer, contains some remarks of the editor, relative to the influence of the stock on grafted fruit, copied from a former volume, in which he lays down the following propositions:

1. "Stocks have an effect as to bearing years.
2. Stocks affect the scion in hastening or retarding the ripening of fruit.
3. Stocks produce defects on grafted fruit.
4. Stocks affect the color of fruit.
5. Stocks affect the quality of fruit.
6. Stocks have an influence in increasing or decreasing the size of fruit."

This subject is not new to horticulturists. An elaborate article by Dr. Mease of Philadelphia, affirming such influence was reviewed by us several years ago, in the 3rd volume of the Genesee Farmer; but we did not think at the time that the evidence was conclusive: and we have seen nothing since to induce us to change that opinion. Still, we are willing to examine the subject anew with fairness and candor.

We should have been gratified if the editor had given in detail, the facts on which he founds those opinions; but as he has only done so in part, we would respectfully suggest that if these propositions are true, it would not be difficult to prove them by experiments faithfully recorded, from the commencement to the termination, and before witnesses of unexceptionable character. Statements of this kind would have a weight that solitary or imperfect recollections can never produce; and more especially where the observations are hastily taken, without a thorough examination of all the circumstances connected with the subject.

But we cannot properly omit on this occasion the statement made by Professor Lindley, that "no such influence can be exercised." He adds: "Those who fancy that the quince, for instance, communicates some of its austerities to the pear, can scarcely have considered the question physiologically, or they would have seen that the whole of the food communicated from the albumen of the quince to that of the pear is in nearly the same state as when it entered the roots of the former. Whatever elaboration it undergoes, must necessarily take place in the foliage of the pear; where, far from the influence of the quince, secretions natural to the variety go on with no more interruption than if the quince formed no part of the system of the individual."

This decision is emphatic; and so far as we can perceive, the reasoning is as clear and conclusive as can be expected from theoretical considerations alone. If there are facts, however, that come in conflict, their weight must be allowed, and the theory should then be revised and amended.

Bearing in alternate years is a habit chiefly observable among apple trees; for when the pear, the peach, the plum, and the quince fail to be regular bearers in this quarter, the deficiency is to be ascribed to unfavorable seasons, or the depredations of insects. The case is otherwise, however, with some varieties of the apple; and we have supposed the habit was owing to the trees becoming, through exhaustion, unable to produce blossom buds for the next season. In this, indeed, we may be mistaken; but of two things we are confident; moderate bearers are commonly annual bearers; and those that we find unproductive, have generally borne profusely in the preceding season. As examples, we would name Vedder's pippins, and the sweet bough, or harvest apple. The former is an alternate bearer, but the latter bears every year; and as we have half a dozen trees set on as many different seedlings, among which we have observed no variation in point of regularity, earliness or productiveness—we feel at liberty to infer that these stocks have had no influence on the grafts.

But alternate bearers conform to circumstances in commencing their biennial course. We had six trees of a russet apple, all of the same variety, half of which bore abundantly at one time, and the other half in the following year. Now if alternate bearing is caused by excess in one season, and we prevent that excess by destroying a portion of the blossoms, we shall certainly prevent alternate bearing. How then can a stock subject to such conformity induce a graft to alter its time of bearing? It appears to us it cannot be.

There are some things in regard to the ripening of the same variety on different stocks, however, that we are not prepared to explain. For instance, we have three trees of the transparent guigne cherry, one of which ripens a week or ten days before the others. The late trees stand near together—the other at the distance of sixty feet. The subsoil in that part of the fruit garden is very variable—small beds of sand in some places, and clay and stones in others; but we know not what the subsoil is under those trees. Neither do we know whether the stocks are all suckers of the morello\* or a part of the Kentish\* cherry. We may ascertain this next season. In the meantime, we are quite as much disposed to ascribe the difference in the time of ripening, to the subsoil, as we are to the stocks.

It is well known, however, that stocks have an influence on the ripening of wood, and tender sorts become hardier when grafted on hardy stocks—not because the latter exerts any specific influence on the former, but because the usual supplies of sap are withheld earlier in the season, and the wood has more time to mature. The same effect is produced when tender shrubs are planted in dry, sterile, rocky situations.

In examining appearances out of the usual order of things, great care is necessary to prevent us from drawing wrong inferences. When different trees derived from the same parent variety, differ in their fruit, perhaps the first idea that occurs is a difference between the stocks, and the matter is settled too often, we apprehend, without further examination. But let us not deceive ourselves.

\* These two sorts as stocks, are well adapted to test this question.

If the stock affects grafted fruit, its action must be regular every year alike; for having neither leaves or branches, it is less subject to vicissitude than any other part of the tree; and therefore no variation in the flavor, shape, or color of the fruit, can be justly ascribed to the stock, except it be regular and every year alike. If it is not so, we must search for some other cause; and even if it is so, there may be another cause. Several years ago, we had the Washington plum, of a light but splendid red. The tree, however, never produced fruit of that color, either before or since. The cause, therefore, could not be in the stocks.

Again—we have three trees of the September pear (summer bon cretien?) growing on pear stocks; and several branches of this fine variety on a Spitzenburgh apple tree. About nine years ago, the latter bore pears that were redder, and sourer, and more astringent, than the fruit from the other trees; and we fancied that the Spitzenburgh had imparted some of its qualities. The cause appeared very plain. Could it be in any thing but the stock? Yes—they never bore such fruit before or since; and the pears are as yellow, and as sweet, and as pleasant, as any that are produced by the other trees. The stock, therefore, could have had no agency in this matter.

We have two trees of the summer bell pear. For several years past, one has borne large fair fruit, changing from green to yellow as it ripens, while the other tree has produced reddish pears, but so knotty, astringent, and unpalatable, that we have consigned them to the hogs; and year after year there was no improvement. Well, what stronger proof can be wanted that the stock affected the graft?—Not too fast. That tree has begun to bear better fruit; and we have no doubt of its final recovery, though the disease we can neither name or describe.

The large white currant is a delicious fruit; and we have had some dozen or fifteen bushes planted in a row, all from the same parent-variety, but about one half of them bear fruit very superior to the others—much sweeter and more juicy or melting; and every visitor who has tasted them concurs in this opinion. And they are regularly so, every year like. Well, is not this a clear proof of the effects of the stock on the graft?—No—they have no stocks—they stand on their own roots.

#### PEAT MEADOWS.

From the Rev. H. Colman's Address at Norwich.

There are large tracts of a peculiar soil eminently adapted to improvement in itself, and to the enriching and improvement of other soils, the value of which has scarcely begun to be appreciated. I refer especially to our peat swamps. These are deep deposits of vegetable matter, the accumulation of ages, which, in many cases at an expense which one year's cropping will compensate, may be made in the highest degree productive in grass, potatoes, carrots, and Swedish turnips, and in some cases, as experiment has proved, in corn, rye and wheat. Three tons of English hay per acre are not an unusual crop to be obtained from these lands, and by proper management their productiveness seems almost inex-

haustible. I will set aside altogether their value as fuel, though in this respect, within twenty-five miles of a large city, they must be considered at current prices of fuel, as of very great worth per acre. After two spits of fuel have been taken the land is still of considerable value to the owner; and if the top-paring, which is unsuitable for fuel, be thrown back, it will in two years afford him a liberal cutting of good fodder for his stock.\* But besides all this, the importance of these grounds, as furnishing abundant resources for his compost heap, and enabling him to enrich his higher and perhaps exhausted grounds, is incalculable. Now the amount of this soil in New England is probably much beyond what most persons would suppose. The island of Nantucket, for example, is calculated to contain 985 acres of peat swamp, from one to fourteen feet in depth, which is almost a tenth of its whole territory; and excluding the four western counties of Massachusetts, which abound less in this kind of soil than its eastern portion, it is calculated that there are at least 80,000 acres or 125 square miles of an average depth of six feet four inches, within this single state. Whether, then, we consider the value of this soil in itself for cultivation, or as furnishing the ready means of restoring that which has been exhausted, we cannot but acknowledge the advantages which it promises to our agriculture.

#### MEANS OF ENRICHING SOIL.

The next inquiry which suggests itself is, whether we have the means of enriching our soils and of rendering them as productive as they may be made. We have first, then, the usual supply of animal manure; and as we are not exporters but are importers of agricultural produce to a considerable extent, this being consumed among us, performs its part in restoring what has been taken from the soil, and in further increasing its productiveness.

Further, in extraneous manures we are by no means deficient. I have already spoken of our peat swamps, and of the vast deposits of this vegetable matter, which are scattered over our territory. Several parts of our territory abound in limestone and in calcareous marls, which it is hoped will prove ultimately of great value. Our sea coasts present an inexhaustible supply of seaweeds and fish, and of marsh and dock mud and muscle bed. Of ashes in various forms we have the usual supplies. Many of our various manufactories furnish directly valuable manures or materials for manure. This may be said, in particular, of our woollen manufactories; comb and brush manufactories; sugar refineries; extensive tanneries; soap factories; oil and candle establishments; glue factories; and slaughter houses. Our large cities and villages furnish the usual resources for manures to the neighboring towns. Many of our lands, likewise, are sensitive to the

\* The editor questions whether this be true as a general remark. The meadow must be remarkably dry in which the land will be worth much for many years after taking out peat two spittings deep.—ED. N. E. FARMER.

almost miraculous powers of gypsum; and though New England has within itself no considerable deposit of this valuable mineral, yet it is easily procured, and may be furnished to every part of the commonwealth at a reasonable expense—an expense in no case, where its efficacy is ascertained, such as to discourage its use.—*Ibid.*

#### SAVING MANURES.

We have made as yet, small advances in the art of saving and compounding manures. There is little doubt that as much valuable manure is now lost or thrown away, through ignorance or neglect, as is used. The practice of renovating and enriching land by ploughing in green crops, or by inverting the old sward, is seldom practised among us, although where this has been done, the effects have surpassed the most sanguine anticipations. The introduction of bone manure and poudrette, is likewise recent; but from their proved efficacy and the facility of their transportation, they are likely to prove extraordinarily beneficial. In New Jersey, I have witnessed the most remarkable effects of a newly discovered marl, of an alkaline character, and of great efficacy. It has more than doubled the value of lands in the neighborhood of the pits where it is found. The application of one hundred bushels of this marl to land which under common cultivation would produce not more than 20 bushels of corn to the acre, causes it to yield 60 bushels, and wheat and clover in proportional abundance. Nor are its effects transient, but it produces a permanent improvement of the soil, the duration of which is not yet ascertained. In this respect it differs most favorably from ashes and many other manures, whose efficacy is continued seldom more than one or two years. At present this marl is delivered at the pits at seven cents per bushel, and might be delivered at many of the ports of New Jersey at a small advance upon that price. The farmers of Long Island have for years been in the habit of purchasing for their wheat fields our leached ashes at a cost of ten and twelve cents per bushel. If these shrewd farmers have then found an advantage in coming to our ports after our drawn ashes, why may not we import marl from New Jersey—a substance far more efficacious and more enduring in its effects than ashes, at even a less price than is paid for our ashes?

In regard then to manures and the means of enriching our lands in New England, there is no deficiency; but we are greatly wanting throughout the state, in frugality to save the vast amounts which are now wasted; in industry to collect the means around us; and in skill and labor in preparing them for use. In soil, climate, and manufactures there is no impediment in New England to a successful agriculture.—*Ibid.*

#### SAUSAGE MAKING.

From the Albany Cultivator.

Should you think our mode of making sausages worth a place in your chapter on domestic economy you can place it there.

We prepare our sausage meat in the usual way. Then, instead of putting the meat in skins, prepared from the hogs' entrails, we make bags of white clean cotton or linen cloth, as large, say, as a man's arm, larger or smaller as may suit, and of convenient length, say about a foot long, and put the sausage meat in these bags, and hang them up to dry. In this, we save much labor in preparing the skins, and considerable in cooking; we slip off the bag from so much as is needed, and cut the sausage into slices of sufficient thickness for cooking. I much prefer sausages put in bags to those put in skins, as they keep more moist. Others, for the same reason dislike them.

Respectfully yours,

CALVIN BUTLER.

P. S. Ripe elder berries make good pies. Try them, ladies.

C. B.

Plymouth, (Conn.) Sept. 17, 1840.

#### CULTURE OF THE PEACH TREE.

From the New Genesee Farmer.

It has been mentioned by writers on the culture of the peach tree, that hot water poured around the trunk at the surface of the ground, will destroy the worm. We have not yet tried it, but we intend to do so; and in the meantime we would suggest to our readers, that it may be done at any time during the winter or spring when there is no snow and the soil is unfrozen. We think the work would be more thoroughly done, however, if the gum be first removed, so that the hot water may enter the habitation of this insect.

Soot has been found excellent for this tree. In one case that has come to our knowledge, its pale leaves were changed into a dark green by this application round its roots; and though the effect may in part have been caused by the destruction of the worm, it has doubtless acted also as a manure. Those who have stove pipes to clean and peach trees to cultivate, should save the soot for this purpose.

One of the most deplorable conditions that a peach tree can be placed in, is to stand in a meadow or grass ground which is annually mowed. Sometimes we see them in door-yards where the grass grows strong, but where neither pigs, nor sheep nor cattle, are allowed to enter. A half starved tree however, is no ornament in front of a house; but we will not find fault without proposing a remedy. Cultivate a circle round each tree, of two or three feet in diameter; and hoe in manure from the stable, the hog pen, the hen roost, the leach rub, or the wood pile, not forgetting the stove pipe, and the tree will soon compensate for the labor by its beauty and productiveness.

#### PROFITS OF A KENTUCKY FARM.

Frankfort, January, 1841.

To the Editor of the Farmers' Register.

The investment of capital in any branch of productive industry should be guided by authentic, practical facts. Political economists, private capitalists, and, indeed, all orders of men, but especially those belonging to the productive classes, are



interested in those facts which relate to the cost of productions and the exchangeable value of consumptions. Producers and consumers are more immediately concerned in them, as affording useful guides leading to a knowledge of the amount of productions necessary to meet the wants of consumption, and to the establishment of equitable and remunerating rates of valuation. Statistic facts, accurately ascertained, and periodically authenticated and published, serve also to render the interests of both producers and consumers more permanent, and consequently, in the long run, more productive. They indicate the mutual relation and dependence of each upon the others; and thus contribute to remove those causes of fluctuation which influence so unfavorably all branches of industry.

The industrial forces employed in agriculture, and the value of its productions, are less perfectly known than those of any other important producing interest. We have occasional reports of the amount of our exports, embracing agricultural productions to some extent, and these are certainly interesting and useful documents; but we know little of the extent of our *entire productions*. Our statistics of agriculture, therefore, furnish only a knowledge of our *surplus productions*. But what ratio do they bear to the whole amount of production? We can only form conjectural estimates; but certainly the surplus consists of but a small proportion of the entire production. Looking at this fact, and seeing that the action of the federal and state governments has been conducted by the light of statistics relating merely to our exports, I have been often tempted to accuse our legislators with criminal ignorance of, and ingratitude towards the greatest interest of the country. Legislation has begun and operated upon the wrong end of affairs. It commences at the end instead of the beginning; and the position is the most unfortunate, because it cannot look back, for the beginning has been leaped over; nor forward, for the end has been assumed as the starting point of legislative action. It should be directed primarily to the *increase of production*; and this, of course, would increase the amount of surplus for export. If, therefore, our governments, while furnishing the facilities for the transportation and export of our surplus productions, would direct their labors towards the increase of the whole productions, we should have more surplus to export, and the works intended for the convenience of commerce, and acting indirectly in favor of production, would prove far more profitable, and more direct benefits would result to all interests. My notion of the duty of government, then, is, that it should furnish to the producing classes, those means of instruction, fitting them for the more intelligent and successful prosecution of their various pursuits, and the expense and labor of conducting which are too onerous to be borne by individuals or associations of individuals. This scheme would, of course, embrace agricultural schools; for in the present state of our country, we can hardly hope to organize them efficiently without the aid of government. These opinions, I am aware, are not generally subscribed to by our politicians; and what is worse, the farmers themselves do not appear to have generally adopted them; or if they have, they have not acted upon them. Under the peculiar forms of our political institutions, we can

scarce expect the action of government to anticipate public sentiment, let it be never so salutary. The government, so far from leading or giving direction to popular sentiment, is driven (off and on) by it. It is the duty of the press, therefore, more particularly the agricultural press, to awaken public sentiment on this subject, and conduct it to right conclusions and effective action. I think, perhaps, the first necessary step in this matter is to take measures to ascertain *accurately* the entire productions and consumptions of the country, which would necessarily also embrace the exports and imports. I can hardly believe the returns of the United States census, recently taken, will be full and satisfactory; and I have strong reasons for doubting the accuracy of even the partial information they will afford. Fullness and accuracy are essential to the utility of statistics.

We have had frequent disputes here as to the productiveness of agricultural capital. We hear it frequently asserted, that in general less than five per cent. is realized; and I presume this opinion is a near indication of the truth. It is certain that he, who in addition to supporting his family from his farm, realizes six per cent., is deemed a thrifty husbandman. But there are many who double, and more than double, this rate of profit. They are, of course, farmers of more than ordinary intelligence and practical ability; and I think the publication of facts, derived from such sources, will serve a useful purpose by stimulating others to improvement.

I have before me a letter from a friend, distinguished alike in the walks of agricultural and political life, detailing some facts which, under the belief they will prove interesting to your readers, I am induced to transcribe. As the writer fears his neighbors may deem him a boaster, I am not authorized to give his name to the public, though I do to you, individually; but I will say upon the responsibility of my own, that no man in the nation bears or deserves a more exalted reputation for integrity. And I will add that, under his course of husbandry, simple as it is, his soil, so far from depreciating, has improved and is improving in fertility; and an acre of his corn-field will measure out as much grain as two acres of his neighbor's field, originally as good soil, but cultivated with less skill and judgment. My correspondent's farm is in a section where land is neither deemed so productive nor valued so highly as in other sections. It is, however, a fine calcareous soil, the substratum of fine clay; the natural timber, oak, sugar tree, walnut, locust, &c. The price at which he values it, too, is high for land in his county, sixty miles from Lexington; and is rarely obtained, unless extraordinary improvements tempt the purchaser. He has offered his farm at the price estimated, but has not met a purchaser. It has not what, in the more highly appreciated sections, would be deemed a due proportion of level arable land, being cut by a meandering creek, giving the hill-sides running down to its margin, to perpetual pasturage instead of the advantage of alternating with tillage.

The profits made on this farm, though highly satisfactory and far better than the general average, are nevertheless exceeded by others in Kentucky. With these observations I subjoin the letter, as follows: Yours, truly,

THO. B. STEVENSON.

—, December 7th, 1840.

*Dear Sir*—Since the conversation we had in relation to the profits upon capital invested in farming, I have reflected upon the subject, and now present you a more accurate estimate of my experience on that subject.

I have, in my farm, 450 acres, of which about 300 are cleared. I estimate the land to be worth, *in cash*, fifty dollars per acre, - - - \$22,500  
 5 negro men at \$800, - - - 4,000  
 3 negro women, (one old,) - - - 1,500  
 8 boys from two to six years old, - - - 1,000  
 8 work horses and mules, at \$70, - - - 560  
 3 carriage and riding horses, at \$80, - - - 240  
 30 cattle of all ages, at \$15, - - - 450  
 350 Merino sheep, at \$3, - - - 1,050  
 65 young sows, shoats and pigs, at \$2, - - - 130  
 (A part of my killing hogs for next year, will be from pigs yet to come.)  
 Farming implements—2 wagons and light cart, - - - 250  
 Ploughs, harrows, &c., including gear for horses, - - - 150  
 Poultry, &c., (including omissions,) say - - - 170  
 Total amount of capital, - - - \$32,000

Legal interest on capital, (\$32,000,) at 6 per cent. - - - \$1,920

Of the cleared land I cultivate, say 60 acres in hemp; 60 in corn; 3 in seed hemp; and 7 in pumpkins, beets, potatoes, &c., including garden, total of plough-land in cultivation, 180 acres. After planting corn two years on the same ground, I have been in the practice of sowing it down in rye for feeding off to stock, and permitting it to remain in rye two years; consequently, I have in crop, in addition to the 180 acres, say 60 acres in rye, 25 in meadow and orchard, and every other year about 10 acres of rye for seed, making an average of about 220 acres in crop. The residue of the cleared land, about 80 acres, is in pasture; and all my wood-land is enclosed, and about three-fourths of it well cleaned up and set in blue grass, and I am annually progressing in cleaning up and setting the remainder in grass, so that I have plenty of permanent pasture, including my rye.

My rotation of corn and rye was adopted when I was engaged in raising mules; but having quitted that business, I intend to make the rotation in future, corn and clover, two years each; and as a preparation for clover, to sow down my ground [in wheat] every second year, and sow clover on the wheat in February following.

I have, as yet, practised no rotation in relation to my hemp ground, but this may be conveniently done, by sowing hemp in a field on which two crops of clover have grown, and converting an equal quantity of hemp land into corn ground; and after two years, sowing it in wheat in the fall, and clover in February, and after two years return again to the hemp crop.\*

Having thus given you a general outline of my mode of farming, I will now state the value of my average products, premising that I have estimated hemp at \$120 per ton, because it will average that

price by holding on to my crop a year or two, when it gets below that price.

60 acres of hemp, averaging one year with another 20 tons, at \$120,	\$2,400
60 acres of corn, intended for feeding stock and for bread,	000
350 sheep, average at the present low price of wool, \$1 per net fleece,	350
Value of coarse parts of wool and increase of flock,	50
Sale of hogs, bacon and lard, average	400
Sale of milch cows and beef cattle, say	100
Total,	\$3,300

My cattle are of the old fashioned Teeswater and Patton stock. Though excellent for the richness and abundance of their milk, they will sell ordinarily for only \$25 or \$30 per head, grass-fed. After reserving what is necessary for our own use and consumption, my sales will not average more than the above sum.

To the above, the following additions should be made:

Within the three last years I have sold 55 mules, and have added those to my working stock, which have fully kept up their value. The increased value of these mules, (2 and 3 years years old when sold,) I estimate at \$35 each, making a total of \$1,925, and a profit for each of those years, of - 622  
 \$3,922

From the above, the following deductions should be made:

Wages of a young man to work and superintend the negro laborers,	\$200
Cash for cutting and breaking hemp, 200	
Clothing and tax for 5 men and 3 women,	160
Tax on land and other property,	30
Blacksmith's and wagon-maker's account, average	60
	\$650

But from this amount, should be deducted what is saved in family expenses by living on a farm; such as house-rent, fuel, bread, bacon, vegetables, poultry, fresh meat, butter, milk, &c., which may be estimated at \$500, leaving \$150 to be deducted from the above sum of \$3,922, and making the profit on the whole sum invested, \$3,722.

I may have omitted some small items of expense which have not occurred to me, but these will be more than covered by several small items of profit; such as hay, cord-wood, hides of cattle and sheep, potatoes, apples, and other vegetables, butter, &c. I throw them in to balance any possible omissions I may have made on the other side.

I have allowed nothing for expense and tax on young negroes, because their increased annual value will fully pay for such expense, and also keep up the number of hands by supplying losses by death. Nor have I made any allowance for the annual increase in value of 1,500 or 2,000 young locust trees, an item of no little importance is my judgment, and which might fairly be estimated as a part of the annual profits of my farm

\* Hemp, if an exhauster of soil, is a very slow one. Deterioration can scarce be perceived in the last of ten successive crops on the same field.—T. B. S.

For the Farmers' Register.

## GREEN-SAND IN GEORGIA.

Mount Zion, Hancock Co., Georgia,  
January 23rd, 1841.

The profits upon mule stock, (as I have quitted that business,) will cease after the present year; but they will be fully supplied by the increased number of hogs and sheep which I shall be able to keep, and by the crop of wheat which I shall raise every second year. Sixty acres of clover will furnish great facilities for increasing the number of my hogs, and besides the corn consumed by my mule stock, will now go to my hogs; and a further improvement of my land will result from adopting the clover in my rotation.

Interest on the capital invested at the  
rate of 12 per cent. per annum, - \$3,840  
Net profit as above, - - - - 3,720

Profit 12 per cent. less, - - - - \$120

Do not the facts herein detailed, show that estimating land at \$50 per acre, farming is a most profitable business? And do they not show the additional fact, that the raising of hemp is more profitable than the culture of cotton or grazing of cattle. Yours, truly and sincerely,

THOS. B. STEVENSON, esq., Frankfort, Ky.

#### RULE FOR ASCERTAINING THE WEIGHT OF CATTLE, SHEEP AND HOGS.

In the "Cattle Keeper's Guide" there is a short and easy method given to find the weight of live stock, which will be of considerable utility to breeders. Let the animal stand square, put a string just behind the shoulder blade; then put the string on the tail so as to form a plumb line with the hinder part of the shoulder blade; take the dimensions on the rule as before, which is the length, and work the figures in the following manner: girth 6 ft. 4 inches, length 5 ft. 3 inches, which multiplied together make 33½ square superficial feet, that again multiplied by 23 (the number of pounds allowed to each superficial foot, for an animal measuring not less than five nor over eight feet in girth,) makes 766 lbs. Where the animal measures less than 6 and over 8 feet in girth, 31 is the number of pounds to each superficial foot. Again, suppose a pig or any small beast should measure 2 feet in girth, and two feet along the back, which multiplied together make 4 square feet; that multiplied by 11, the number or pounds allowed for each square foot, when measurement is less than three feet in girth, makes 44 lbs. Suppose again a calf, sheep or hog should measure 4 ft. 6 inches in girth, and 8 ft. 9 inches in length, which multiplied together make 16½ feet, that multiplied by 16, the number of pounds allowed to animals measuring less than five feet and more than three in girth, makes 268 lbs. The weight of cattle, sheep and hogs may be as exactly taken this way, as is at all necessary for any computation of valuation of stock, and will answer exactly to the four quarters sinking the offal; which every man if he knows a few of the first rules of arithmetic and can get a bit of chalk and a string can readily perform. A reduction must be made for a half fatted beast, of one pound in twenty, more than from a fat one; and from a cow that has had calves and is only half fat, two pounds in twenty must be deducted.

Dear Sir.—Nothing but a wish to improve our practices in agriculture, and to develop the natural resources already provided for us, has caused me, a stranger, to intrude this communication on your attention, and I beg of you to dispose of it as the above reasons may direct your better judgment. It is on the subject of what you call green-sand or gypseous earth. During last year J. R. Colling, our state geologist, made an examination of this section, and found immense beds of what he pronounces to be this earth, commencing at what he considers the western limit of the oceanic region, and extending through a parallel region of some 30 or 40 miles. It appears to be by no means continuous or of uniform quality; and we are anxious to make a proper use of it, though not to be duped by quackery or an inordinate zeal; and I know of no other means of diffusing useful information on that subject than through the Farmers' Register.

I have had a specimen from my farm analyzed by Mr. Colling, and he says he has done it with all possible care and accuracy, and reports 100 grains dried to contain

Water of absorption,	- - -	6 grs.
Fine silicious sand,	- - -	9 "
Sulphate of lime,	- - -	9.75 "
Carbonate of lime,	- - -	5.46 "
Protoxide of iron,	- - -	4 "
Carbonate of magnesia,	- - -	3 "
Potassa,	- - -	12.87 "
Silicia,	- - -	36 "
Alumine,	- - -	6 "
Loss,	- - -	8.42 "

100

My residence is about 10 miles above the oceanic region, in latitude 33.26, longitude 83.2, and about 700 feet elevation above the ocean, on a small water course making into the ocean. The virgin soil was remarkably fertile, particularly for tobacco and grain; and is so now when the forest is taken off, though by neglect it is easily gullied and galled from the soil being soft.

We generally find the green-sand in the gullied bluffs near the creek bottoms—I believe in every case under what is called a *ferro-argillaceous* sub-soil of a deep red color, though the strata of rocks beneath this subsoil, and in the neighborhood of the green-sand, varies exceedingly. I believe what is called feldspatic gneiss is most common, but you will frequently find in the same gully hornblende, hornblende slate, pyrites or sulphuret of iron, mica slate, and some blocks of granite. Mr. Colling found in different places what he conceived a full gold formation, quartz, &c. In analyzing [the green-sand] from the neighborhood of the ridges, he found from 4 to 5 per cent. of carbonate of lime, though no sulphate of lime; from the creek deposits he found less carbonate of lime, but about 3 per cent. of sulphate of lime. How deep the deposits of green-sand are we cannot tell; we penetrated one bed about 10 feet, and it appeared to get better. It is generally of a bluish-green with white streaks, and changing from that to a yellow and chocolate color, alternating

from one to the other in veins, is always soft, more disposed to absorb water than common earth; and, as it dries, falls into an ash-colored powder, and I should suppose its average depth below the original soil would be from 6 to 8 feet. In some specimens there is a good deal of fine mica and sulphuret of iron. I have been thus particular in describing both the substance and the location, thinking it might aid you in your speculations on its natural history, and probably its application as a fertiliser.

There appears in this section some disposition to change the old ruinous system of agriculture, and to adopt in its stead an improving one; and though I am but little used to writing, if I can furnish you with any facts that would enable you to effect the revolution, I shall be amply compensated for my time and labor.

I am but illy prepared for geological discussion; but this green-sand earth does not look to me, when in place, to be a deposit. It has more the appearance of rock or some solid substance decomposed; and as it shows very few or no animal remains, I am very much inclined to think it an older substance than marl or the carbonate of lime and shell formation of the oceanic region, (though this opinion is merely for what it is worth.) What we now desire of you is, through the Farmers' Register, to tell us how to use it.

Very respectfully,

J. S. WHITTEN.

As little as we know about green-sand, (and we have as often admitted our ignorance on this mysterious subject, as we have charged it on others who pretend to abundant and all-sufficient knowledge,) there is no difficulty in pronouncing that the earth in question is certainly what geologists call "green-sand;" and according to the analysis, it is uncommonly rich. Besides a larger proportion of potash than usual, (to which some geologists ascribe the effect as manure,) there is a valuable amount of carbonate of lime, and perhaps of carbonate of magnesia, and a very large proportion of the unusual ingredient, sulphate of lime, or plaster of Paris. Now with all our disbelief of what geological surveys state, or indicate, on the effects of green-sand as manure—and with our distrust of its general and profitable effects as promised by geological "quackery," we should, if in our correspondent's place, expect much benefit from the use of this earth. If put on calcareous soil, and on suitable plants, (clover especially,) the green-sand of itself will be beneficial; though to what extent, and for what length of time, is the question yet to be settled. If put on acid soil, where the green-sand of itself would be utterly useless, as we think, the calcareous ingredients (carbonate of lime and magnesia) of the manure would neutralize the acid of the soil, and then permit the green-sand and the gypsum to act beneficially.

For our opinions, expressed at length on this subject, we can here but refer our correspondent to

the whole report on the use of green-sand and green-sand marl on the Pamunkey lands, contained from page 679 to 691 of volume 8, Farmers' Register.—ED. F. R.

#### ON SUBSOIL PLOUGHING.

From the New England Farmer.

The English agricultural journals for the last few years, have contained many articles upon the practice of subsoil ploughing. Our readers, we suppose, understand this to be the use of a plough having a narrow *double share*, or a small share on each side of the coulter and no mould-board. It is used in each furrow after the common plough, and breaks up and stirs the subsoil to the depth of several inches, without bringing it up and incorporating it with the soil. Many farmers in England have derived great advantages from this process, in connexion with under-draining. Others have found it waste labor. The January No. of the Journal of the Royal Agricultural Society of England contains a communication upon this subject by H. S. Thompson, Esq., parts of which we extract below.

Heretofore we have received the impression that our Transatlantic co-workers deemed this process peculiarly suited to stiff and heavy soils, consisting mostly of compact, adhesive clays. They now begin to intimate that shallow soils of the lighter kinds may be quite as susceptible of improvement under this process as any other. We have often conjectured that it must be thus; and have supposed that many of our shallow, gravelly and sandy soils in New England would be rendered more retentive of moisture and more fertile by simply subsoiling without under-draining. Some of the observed facts, leading to the supposition are, that we have seen apple trees growing better in gravel that had been moved, than in the deepest and richest mould; that grass, on a narrow strip where the subsoil had been thrown out and replaced when putting down the logs of an aqueduct, was much more abundant than on the adjoining portions of the field; that an immense—a *mammoth* squash had grown upon an unmanured gravel heap that had been formed when digging a well. The loosening of the subsoil, making it more pervious to air and water—bringing many particles into contact with particles that have not touched them before, and thus, perhaps, promoting slight fermentations and new chemical combinations, may fit the subsoil to attract, receive and nourish the roots of plants. Can our practical men give us any useful facts or observations upon this subject? The matter is worthy of attention.—ED. N. E. F.

BY H. S. THOMPSON, ESQ.

Public opinion is still much divided on the subject of subsoil ploughing. Some very eminent farmers maintain that it is lost labor; while others, equally eminent, think no system of husbandry complete without it. When men of sense and experience differ respecting matters of fact which have come under their own observation, it will generally be found that, like the travellers disputing about the color of a chameleon, neither would be wrong if he would only allow his opponent to be right. To take a case in point—one farmer of

my acquaintance, drained deep and used the subsoil plough with every precaution and care, yet found it fail; another, following precisely the same plan, permanently improved the texture of the soil: both were anxious that their friends should profit by either the example or the warning, and lost no opportunity of making the result public. For want of a better term, both experiments were said to have been made on *stiff* soils: both are credible men; and the natural result of such conflicting testimonies is, that the question remains undecided. Here we feel the want of some acknowledged classification of soils, founded on chemical analysis. No two witnesses could be more directly at issue than those alluded to above: and very possibly, both one and the other may have been quoted by the supporters or opposers of the subsoil plough as triumphantly establishing their position. The moment, however, that the two experiments are referred to their place in the geological map, the whole difficulty vanishes. One was made in a stiff, marly clay, on the new red sand-stone formation; the other on that most tenacious of all soils, the *lias* clay: the one was permanently improved; the other ran together again almost as soon as done.

It would be but waste of time to give any additional proof of what has already been fully established, viz: that on some soils the subsoil plough has been eminently useful; that on others it has signally failed. The grand desideratum, at present, is the discovery of some test which shall enable us, on the examination of any given soil, to pronounce tolerably confidently that it would be advisable or useless to subsoil it. I feel fully persuaded that the per centage of alumina, or pure clay, in any soil, furnishes the required criterion. In the two instances quoted above, I procured an analysis of the soils, and found that, in the one on which subsoiling was of no use, the proportion of alumina was twice as great as in the other: this most unexpected result first suggested the rule above stated; and in all the cases which I have since had an opportunity of examining, it has been fully confirmed. A rule of this kind can only be established by numerous experiments on various soils; but if those gentlemen who are so anxious to promote agricultural improvement, would kindly forward to the secretary of the Yorkshire Agricultural Society the result of their own experiments with the subsoil plough, accompanied by either an analysis of the subsoil on which it was tried, or even a specimen of the subsoil for analysis, the question of subsoil ploughing would very soon be set at rest; and it would be as easy to point out the soils which would be benefited by it, as it is now to distinguish turnip and barley soils from those adopted for wheat and beans.

I will now state the steps taken to test the truth of the rule above mentioned, viz: that the per centage of alumina ought to guide us in the selection of soils for subsoiling. I wrote to several gentlemen whom I knew to have used the subsoil plough, and on whose accuracy I could rely, and begged that they would furnish me with some account of their experiments, and send me a specimen of the subsoil for analysis. I have, wherever practicable, given the account in the words of the writer; and can only regret that the shortness of time has prevented my collecting more evidence on the subject. The following essay was sent

me by that very intelligent farmer, Mr. Black, land-agent to the Earl of Zetland, at Marske, in Cleveland:

"There is probably no agricultural operation that has been so strongly recommended by some, and so much censured by others, as subsoil ploughing. Its advocates have represented it as the great panacea for all soils and situations; and its introduction, they say, will form a new epoch in agriculture. Believing that neither party have viewed the subject properly in all its bearings, I beg leave humbly to offer a few remarks, first, on the soil that will receive the most permanent improvement from subsoil ploughing; and, second, where it can be of no utility. The soil that I believe will receive the most permanent improvement from subsoil ploughing is one in which silica predominates; indeed all shallow soils, of the lighter kinds, will be improved by it; and particularly so if there is any moorland pan, or indurated incrustations, formed by the weight of the plough going for a number of years at the same depth, or from other causes. If the subsoil is of good quality, and a greater depth of furrow is wished for, the subsoil plough may be used with advantage; the percolation of water prepares the subsoil for amalgamation with the surface. Strong clayey land cannot be permanently improved by subsoil ploughing. Alumina is a tenacious, compact, adhesive substance, its parts are in minute divisions, and have great affinity for each other. In September, 1838, I subsoiled two fields of 10 acres each, which had been previously drained, and as the nomenclature of soils is not at all intelligible, and has led to much mischief in detailing experiments, I send you the analysis of 300 grains of the field since ploughed.

300 grains consisted of—

	Grains.
Moisture,	61
Soluble matter, principally vegetable,	8
Lime, in the state of carbonate,	2
Peroxide of iron,	50
Alumina,	130
Silica, or fine sand,	20
Vegetable matter,	23
Loss,	1
	300

"One of these subsoiled fields produced 35, and the other 27½ bushels of wheat per acre; the field that produced the greatest number of quarters per acre was subsoiled across the drains; the other parallel with them. I do not attribute this great falling off per acre altogether to the parallel subsoiling, although I think the other is decidedly the best method. In December, 1839, one of the fields was ploughed, but no traces remained of the subsoil plough having been used. I expected, from the complete breaking up of the subsoil, that the parts would have remained distinct for years; but such was not the case: they had run together, and were as compact as when first moved by the plough, without even the appearance of water-shake or fissure. This I was not prepared to expect. Separated by a fence only is another field of a similar description, which was fallow at the same time, but not subsoiled; the crop on this field was quite equal to the other. A neighbor subsoiled one acre of a field which was sown with

beans; this field I frequently saw through the summer, and during that period the part subsoiled was by no means superior to the other."

On reading this account my attention was naturally arrested by the great difference between the produce of the two fields subsoiled by Mr. Black; and as it was important to ascertain whether any sufficient cause could be assigned independent of the different methods adopted in subsoil ploughing them, I addressed him the following questions:—Is the field which produced 35 bushels per acre of better quality than the one which produced 27½; or was it better manured, or the seed time more favorable? His answer was as follows:—"The land, (viz., that which produced 35 bushels) is much inferior. I ascribe the superior crop to the field having been more recently drained than the other. I have always found the first crop after draining above an average. Lime, too, was applied to this field two years before, which did not appear to have acted until the water was taken off: and last, although not least, it was subsoiled across the drains. As regards manure, I consider the fields alike in that respect. Both fields were sown under favorable circumstances." Draining after lime appears quite adequate to account for this increased produce; but even should we attribute a portion of it to subsoiling across instead of parallel to the drains, the whole effect seems to have vanished before the next ploughing, as we read in Mr. Black's account. In confirmation of Mr. Black's views, I will quote the opinion of Mr. Vansittart, of Kirkleatham, whose experiments I had an opportunity of observing whilst in progress. I need hardly add that they were made in the most judicious and effectual manner. "Upon subsoiling I have nearly made up my mind, and am satisfied that it is not of permanent use on this soil." We have here the experience of Mr. Vansittart, Mr. Black, and a neighboring farmer, all of whom agree in thinking that subsoiling is of no use on their land. The quality of land is the same in all: consisting of a level and uniform tract of that peculiarly tenacious soil, the liae clay, containing, as we see by the analysis furnished by Mr. Black, (made at Edinburg,) no less than 43 per cent. of alumina or pure clay. The next evidence I shall adduce is that of Mr. Stevenson, of Rainton, near Boroughbridge, a very enterprising and judicious tenant-farmer; whose farm chiefly consists of a stiff red clay, on the red sand-stone formation. He began by subsoiling 17 acres in the winter of 1835-'6: the summer following, these 17 acres grew a remarkable crop of turnips, though the year was in general a failing one for that crop. The turnips were followed by barley, seeds, wheat—all good crops. When ploughed deep again for turnips, at the end of the course, it was found to work much lighter than the land not subsoiled. The man who held the plough in both instances found a great difference in the mellowness of the soil turned up, and consequently in the labor of the horses. The subsoil, on analysis, showed 24 per cent. of alumina. The exact analysis is as follows:

Specific gravity, 2,070.	
100 parts contain—	
Of water of absorption,	7
Silica,	55
Alumina,	24

Oxide of iron,	7½
Soluble matter,	2
Loss,	4½
	100

Mr. Stevenson found so much benefit from the operation, that he has since subsoiled 27 acres, and means to continue it on a large scale. A glance at the experiments above described enables us to make a first approximation to the solution of this much debated question. It appears probable that a soil containing not more than 24 per cent. of alumina may be subsoiled with advantage, but that when it exceeds 40 per cent, no permanent improvement is derived from the operation. Many more experiments must be made before this approximation can be so modified as to make it of general application: and I would beg to suggest to those gentlemen who may feel disposed to assist in the inquiry, that any account of the use of the subsoil plough on land containing more than 24 and less than 40 per cent of alumina would be particularly valuable, as the first point to ascertain is, the maximum quantity of alumina which may exist in land without making it unfit for subsoiling. From what has been stated above, there is reason to suppose that this maximum point lies between 24 and 43 per cent.; every experiment, therefore, made on soil containing more than the one and less than the other, reduces the doubtful soils within narrower limits. It would also be advisable to try the effect of subsoiling on two soils containing equal quantities of alumina, but otherwise differing in the composition, as it is possible that other substances, in combination with alumina, may in some degree affect the result.

I have, thus far, confined myself to stiff soils; but as the subsoil plough has been little used on light land, and its effect therefore is little known, the following paper from Mr. Denison, of Kilnwick, Percy, will be read with great interest:

[Mr. Denison's operations were made on a field consisting of sandy hills, light, blow-away soil, and marshy hollows—peaty soils. After having described the drainage and its expense, he says:]

"The first process after the drains were complete was in the months of March and April to pare and burn; and to sow rape and turnips, drilled with half-inch bones and soot in the following month. The crop was not at all regular; being good where the soil was deep and black, but very bad where it was sandy: the sole being hard and the action of the sun having great power to the very roots of the plants.

"In the winter of the same year, after the turnips and rape were consumed, I ploughed land in the direction of the old furrows, and the subsoil plough followed, worked by two oxen and four horses; loosening the hard sandy sole on the higher ground, and tearing up the roots of the rushes, &c., on the low. In this state the land lay till the month of April following, when Finlayson's drag-harrow was applied across the ploughings, which brought up all the roots and rubbish to the surface; these were then raked off and burnt. I then sowed the black Tartarian oats, and ploughed them in; the ground was then harrowed and pressed down with a clod-crushing roller, made by Mr. Croskill, of Beverley, which imple-

ment has been of the greatest service to me in almost every stage and crop. It has been the means of consolidating the earth, which would otherwise have been too light, and it has kept the moisture in also. It has a decided advantage over every other kind of roller in this respect, because it leaves an uneven surface instead of a flat one, from which the rain, in sandy land especially, is apt to run off without nourishing or refreshing the crop.

"The oats came out very healthy and had no check: in sixteen weeks from the time of sowing they were reaped, and when thrashed yielded 10½ quarters per acre, which were sold at 26s. per quarter, and this from land that was let two years before at 2s. 6d. per acre.

"I calculate the expense of subsoil ploughing, according to my mode of using it, at 26s. per acre, thus:

Four horses and two men, per day,	14s.
Two beasts and one man,	5s.

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19s.

"These will do 3 rods per day. The oxen are yoked to the plough, and the four horses precede. I sowed 40 acres with oats, of the same flat of land that had been pared and burnt, but not subsoiled, from want of time. The produce of this was not more than 3 quarters per acre, and straw small and short; a very fair proof of the advantage of subsoiling.

"I have now 100 acres of wheat and oats growing on what was the very worst part of the whole property, and considered perfectly useless. It has been drained, pared and burnt, and subsoiled exactly after the mode detailed; and it looks as promising as what was so good last year. The land upon which I had potatoes exhibits as decided a superiority; and I shall in another year be able to state what effect subsoiling has upon the turnip crop as upon the produce of the wheat.

R. DENISON."

#### OBSERVATIONS ON CATTLE AND ROOTS.

From the Southern Agriculturist.

Palmetto Hall, Dec. 19th, 1840.

Mr. Editor:—I am sorry to see that the desire to cultivate root crops and the grasses, is not keeping pace with the mania for improved breeds of cattle, hogs, &c., for the fact is, that the breed of animals decidedly the best adapted to our present cruel course of treatment is our present, as the valuable property of being able to endure rain, cold, and hunger, has been carefully cultivated and kept in practice for many generations past, and the experience with one half-Durham heifer, one three-quarter Durham bull and one Devon cow, fully satisfies me that the *part* Durhams and I think the whole Durhams too, will not grow as large nor keep as fat as our native cattle, if they can ever be called fat, and the Devon will grow no larger, and even with much better fare, will not more than equal the natives, which you see is in strong contrast with Mr. Carroll's experience; and as regards breeding, his principles are certainly a smashing innovation upon the hitherto received theories and practices on the subject. All this is merely an introduction to my experience and theory of the cultivation of roots.

Among the beets I give the decided preference

to the mangel wurtzel over the sugar beet, because it suits our shallow soils better, as it grows more above than below ground, and consequently is more easily cultivated, and contends better with grass and weeds, stands our climate and insects, and the predatory habits of our negroes better, and is longer fit for use, and, I believe, more productive. I planted flush in one of the poorest beds in my garden, which is a salt homock, in February, 1838, one ounce of mangel wurtzel, they bore seed the summer of 1839, and in July of 1840 I pulled three roots that were about two and a half feet long, and five or six inches through in the largest diameter, and I believe that cattle would then have eaten them. I cannot say what proportion withstood the first summer as I made no observation on the subject, being ignorant of the general belief, that they could not endure the summer's sun. In February, 1840, I planted one pound of the sugar beet seed in the same garden, and similar (but not the same,) soil, and I have now about one third remaining, and they are so hard that cattle refuse to eat them. Both parcels were neglected during the summer, and therefore did not serve to form any fair idea of what they might do under proper management. I have sown some of the Altringham carrot, and the mangel wurtzel in exactly the same spot, in order to give them a fair and comparative trial, and I will try to let you know the result in due time. I have adopted the following system of cultivation as the only one suitable to our circumstances. The land being level, (if it is not it must be made so,) I track it every three feet with the bull tongue plough, and if the soil requires manure, which almost all our lands do, I run the barshare or shovel plough in the track as deep as possible, and scatter the manure at the bottom of this trench. I then turn back and bed up as well as I can with the plough, and finish off with the hoe, or bed entirely with the hoe if more convenient. With a small and very simple dibble, I dibble holes for the seeds at every six inches, and put only two or three seeds in each hole, and cover it with the hand or heel, so as to press the earth close to the seed. When the plants acquire a sufficient size, I thin the beets to one plant in every other hole, the intervening ones being sufficiently large to feed the cows or pigs, but the carrots I leave one plant in each hole, as they require less room. As we do not require these roots until sweet potatoes are done, I think that the best time to sow them would be in the fall, say about one month later than the ruta baga, as they would then be fit to feed upon by April, if not earlier, which is the time we stand most in need of food for our cattle, for after June, or even May, we have grass enough in our corn fields.

#### ON THE GEORGIA FEVER AMONG HORSES.

From the Southern Agriculturist.

January 19th, 1841.

Mr. Editor:—There is now prevailing in the lower part of our state, and perhaps elsewhere, a disease known as the Georgia fever, which attacks horses, and has proved fatal to a large number of them. I am not aware of its having ever been here before the last season, when a number of horses in the livery stables in Charleston were

attacked, and a large portion of those so attacked died, as I have been informed. It was found to be highly contagious. With the summer, I believe it ceased, at least I heard nothing of it. But it again made its appearance this winter, in the city, and in the livery stables. Some of my friends who unfortunately carried their horses there, got them infected, and have lost several. The disease has spread into the country, producing much uneasiness, and loss, in the services of the animals, and in many cases the loss of the animals themselves. My object in addressing this note to you is, to request information as to the origin, nature, and cure of the disease. Will either you or some of your correspondents furnish the information requested above? Yours, truly, G. A.

*Remarks of the Editor.*—We can furnish our correspondent with but little information on the subject, but hope that some of our readers will do so. The name of the Georgia fever, we understand, was given to this disease *here*, because it was first observed among some horses brought from that state. The disease appears to be highly inflammatory. The first symptoms are a drooping of the head, a loss of appetite, and of course of spirit, a running of the eyes and nose. As the disease progresses the feet and limbs become swollen. The remedy, which, as we have been informed, has been found most efficacious, has been to bleed copiously as soon as the symptoms are noticed. This is said to be almost a certain cure. We have had two horses laboring under this disease, both were bled copiously, (from 4 to 6 quarts,) and fed lightly on bran and oats. They are now both well, and were sick very little more than a week. No medicine was given. In fact, we are informed by one who has had considerable experience, that all medicine proves decidedly injurious, and that he had not seen a single instance in which it was administered, that the horse did not die. If the first bleeding should not prove sufficient, a second is resorted to, but this is rarely necessary. When the legs begin to swell, the disease is said to be on the decline. We have given these imperfect answers to the queries of our correspondent, with the hope that the remedy which has been so efficacious in our hands, may be found equally so in that of our friends, should they be so unfortunate as to have occasion for it. We request, however, that some of our readers will reply to them more fully than we have been able to do.—ED. SO. AGR.

EXTRACTS FROM THE ANNIVERSARY ORATION OF THE STATE AGRICULTURAL SOCIETY OF SOUTH CAROLINA.

By Gen. George McDuffie; read before the society on the 26th of November, 1840, at their annual meeting in the Hall of the House of Representatives.

The greatest, most prevailing, and most pernicious of all the practices which distinguish and deform the agriculture of this and the other cotton planting states, is the almost exclusive direction of the whole available labor of the plantation, to the production of our greatest market staple, and the

consequent neglect of all the other commodities which the soil is capable of producing or sustaining, and which are essential to supply the wants of the establishment. No scheme of reform or improvement can produce any great and salutary results, which does not lay the axe to the root of this radical vice in our husbandry.

It should be, therefore, an inviolable rule in the economy of every plantation, to produce an abundant supply of every species of grain, and of every species of live stock, required for its own consumption. I am aware, that in peculiar localities, when the price of cotton has been high, examples may be found of successful planting where this rule has been disregarded.

But this serves only to prove, that even a bad system prosecuted with great energy and under favorable circumstances, may be crowned with a considerable share of the success which would more certainly have rewarded a good one. Such examples, if they constitute an exception to the rule I have laid down, by no means impair its force or disprove its general expediency. The economy of a plantation should be founded, not upon temporary and mutable expedients, but upon general and permanent rules, adapted to all the probable vicissitudes of trade and of the seasons, and all the probable fluctuations of prices and of the currency. We have surely seen enough of these fluctuations, and sufficiently witnessed, if not experienced, their disastrous influence, to warn us against the fatal policy of yielding up the lessons of experience to the temptations of high prices and prosperous seasons. It is, indeed, one of the greatest which these fluctuations habitually produce among us, that we are but too successfully tempted, by the temporary allurements of high prices, to abandon all the maxims of wisdom and all the rules of sound economy, which have been imposed upon us by painful experience, in periods of depression and adversity. Let us, then, each one for the sake of his own interest, and all for the common welfare of South Carolina, solemnly and deliberately resolve, that we will never again, under any temptation, incur the just reproach which must attach to our character as planters, if we should be induced to rely upon distant communities for those essential supplies, which our own plantations are so capable of producing. And to the end that this high resolve may be more firmly adopted and perseveringly maintained, I shall endeavor to show, that it is the dictate, not less of an enlightened self-interest, than of an enlarged public spirit.

We are, then, to consider and decide upon the comparative cheapness and economy of producing ourselves on the one hand, and of purchasing from abroad on the other, the hogs, horses, mules, and other live stock, required for the use and consumption of our plantations, during an average series of years. A stranger to our wretched habits of economy would be startled at the mere propounding of such an inquiry. He could not comprehend the economy of importing from Kentucky, what our own soil and climate are so eminently adapted to produce. However plausible, it is most assuredly by a false economy, founded upon false reasoning. A man who will assume that our hogs and horses must be raised exclusively upon corn, and gravely sit down to calculate the cost of so



many bushels at seventy-five or even fifty cents a bushel, will certainly come to an erroneous conclusion. But those of us who systematically pursue the business of raising live stock, can testify that the quantity of corn necessary to raise hogs, horses or mules, is extremely inconsiderable. Oats, whether harvested for the work horses and mules, or used as pasturage for stock hogs and stock horses and mules, is an invaluable crop for a cotton planter. That which is used as pasturage, while it will cost only the labor of preparing the ground and seeding it, will keep all the stock in fine order, from the middle of summer until the opening of the pea fields, and these, which cost scarcely any labor, will keep them in like order, with very little aid from the corn crib, until December. From this time regular feeding will be required for about four months, and after that, very little will suffice till the oat pastures are again ready. In this view of the subject, I have omitted many useful auxiliaries, such as potatoes, pindars, peaches and apples, the two latter of which are often permitted to rot on the ground, though excellent food for hogs, and perhaps the least expensive of all. Nor have I embraced in it the artificial grasses, though I am quite sanguine from the experiment I now have in progress, that in most of the strong soils of the country, blue grass and herds grass will succeed very nearly as well as they do in Kentucky. Upon the whole, then, it is my deliberate opinion, founded upon my own experience and observation as a planter, that in South Carolina, and particularly the upper country districts, it would be true economy for the planters to raise their own stock, even if they could always buy Kentucky pork at three dollars a head. But let it be remembered that to accomplish this, they must devote themselves to it as an essential branch of their business. A regular system must be adopted and a competent person be charged with its execution; and overseers must be made to know, that it is as much their duty to superintend it, as the cultivation of the cotton crop; for hogs and horses can no more thrive without proper attention, than corn and cotton can grow without attention. And it is worthy of remark, that when hogs are fat or in a growing order, it requires not half so much to keep them in that condition, as it would require to sustain poor hogs and prevent them from growing poorer. It is, therefore, a most obvious rule of economy, never to permit stock hogs to sink below what we denominate a growing condition. The corn that will be required to keep them in that condition during four or five months in the year, will be less than that which would be required in extra feeding to prepare poor hogs for the slaughter pen; and at the same age, their weight will be fifty per cent. greater, and their flesh will be much more firm, than that of hogs brought up in poverty and suddenly fattened. I am now speaking the actual result of my own experience, and I have been astonished to perceive how little corn is required to prevent fat hogs from getting poor.

As an important part of the branch of economy we are now considering, every planter should keep as large a stock of neat cattle, and of sheep, as his pasturage and the offal of the plantation will support. To this extent, there is no description of stock so valuable in proportion to the expense of

maintaining them. Their flesh is much cheaper than that of hogs, and besides supplying the table of the planter with an abundance of good beef, butter and mutton, the former will advantageously supply one half of the plantation rations of meat during the autumnal months; and the latter, all the wool required for clothing the negroes in winter. In addition to all this, it is the opinion of the most experienced planters, in which I fully concur, that where cattle are penned every night on grounds properly covered with litter, the manure they will make in the course of the year, will very nearly defray the expense of maintaining them.

I have thus attempted to show that it is the true interest of every planter to raise all the live stock required for his own use and for the use and consumption of his own plantation, though no one else should pursue the same policy.

I now propose to consider the subject in a still more interesting point of view. I propose to inquire what would be the effect of this system upon the general prosperity of the cotton planting states, assuming that it should be universally adopted. It is not extravagant to estimate the annual expense which a planter would incur in purchasing his supplies of stock, at one tenth of the net proceeds of his cotton crop, as exhibited on the books of his factor. Assuming, then, that the labor diverted from the production of cotton, in order to raise these supplies, would diminish the cotton crop in the same proportion, it would follow that each individual planter would derive as large a net income from his diminished cotton crop, as he would have derived from one tenth larger, if he purchased his stock, even supposing that the diminished cotton crop, brought no higher price than could have been obtained for the larger one. But here we realize the grand result of the proposed reform in our agricultural economy.

It is a well established principle of political economy, confirmed by the uniform experience of the cotton planting states, that when the supply of a commodity exceeds the effective demand, the price is diminished, not in proportion to the excess, but in a still greater proportion. If, then, we assume that the proposed reform would reduce the annual cotton crop from two millions of bales, to one million eight hundred thousand, and that the effective demand of the world would not exceed the latter number, it would clearly follow from the above stated principle that the smaller crop of one million eight hundred thousand bales, would yield a greater aggregate income than the larger crop of two millions of bales. In the habitual state of our cotton trade, with a constant tendency in the production to exceed the demand, such would always be the result of diminished production where no extraordinary causes existed to check consumption. It results from this reasoning that the planting states would realize from the universal adoption of the proposed reform, a clear aggregate saving of the sum annually expended in purchasing live stock; and that each individual planter, besides greatly increasing the comforts of his establishment, would add ten per cent. to his annual income. Entirely satisfied, as I am, of the soundness of this reasoning, and the justness of the conclusion to which it leads, I am aware that it is exposed to an apparent objection. It may be naturally asked, how it happens that the planters, a class of men sufficiently intelligent

to understand their own interest, should generally pursue a course so little calculated to promote it? A sufficient answer will be found to this question, in the force of established habits, the mistaken ambition which makes the point of honorable distinction consist in the number of cotton bales, and above all, the unfortunate habit so generally prevalent among planters, of neglecting their own business, and confiding it to the exclusive management of overseers. It is a duty which every planter owes, not only to himself, but to his country, as a matter of example, to give his personal superintendence to his business, and make himself master of all its details. He can scarcely deserve to own an estate, who from false pride or indolent self-indulgence, remains in voluntary ignorance of the various operations upon which its productiveness depends, and relies exclusively upon agents who are practically irresponsible, and in general grossly incompetent. Certain it is, that no general reform or improvement in our agricultural economy, will ever be made by overseers. Agents who are employed from year to year, who have no interest, in any permanent improvement, and who are generally actuated by the motives of a tenant at will, which prompt them to aim at a large cotton crop the present year, without any regard to the future, or to the subsidiary branches of a sound system of economy. Every planter who has attempted such reforms or improvements as I have suggested, can testify how utterly impossible it is to make overseers, generally, realize their importance, or bestow upon them sufficient attention to insure their successful execution. Let it, then, be regarded as the point of honor with every planter to attend personally to his plantation, and make himself master of every branch of its operations and economy. This is an indispensable preliminary step to all useful improvements in our agriculture, and is equally demanded by every consideration of private interest and public duty.

Another mischievous error in our planting economy, proceeding partly from the mistaken ambition of making a large count of cotton bales, and partly from the uncalculating habits acquired during high prices, is exhibited in the general carelessness with which cotton is picked out of the field and prepared for market. It has been fully demonstrated by experience that those planters who have their cotton properly handled, and sent to market free from the contamination of trash and stain, can habitually obtain in our own markets, one cent a pound more than can be obtained for cotton prepared in the usual way; and I can personally testify, as the result of my own experience, that the difference made in foreign markets is much greater. Now, I invite your serious attention to a few plain and obvious reflections on this subject. A diminution in price of one cent, a pound at the present market rates of cotton, is equal to ten per cent. discount upon the gross amount of the annual income of the planter, and a still larger per centage upon the amount of his net income. It follows, that by the careless operations of four months in gathering the crop, one tenth of its value is destroyed, and one tenth part of the labor of the whole year is absolutely nullified. The labor of one hundred hands is reduced in value to that of ninety, and five hundred bales of cotton are reduced to four hundred

and fifty. Now I confidently put it to every practical planter, as a plain question of economy, what possible advantage there can be in carelessly picking out a cotton crop, that will compensate the planter for this sacrifice of fifty bales of cotton, the product of the whole annual labor of ten hands? Let it be admitted, and it is an extreme supposition, that hands will pick out one tenth more in the one mode than they will do in the other. Even on this hypothesis, one tenth of the labor of the whole year would be sacrificed for the sake of one tenth of the labor for four months, and to this sacrifice we must add that of the additional expenses of the horse power required to make the additional fifty bales of cotton. Does not the conclusion, then, irresistibly follow from these premises, that every planter should lay it down as a cardinal rule, in pitching his crop, to plant no more than he can pick out with proper care, giving due attention to the other interests of his plantation. This rule, like that relating to live stock, comes recommended by the twofold consideration, that it not only promotes the individual interest of each planter, but still more extensively, the general interest of the entire class. If it will cause a diminished quantity of cotton to be produced, it will cause the price of that diminished quantity to be proportionately increased, by its superior quality, and still further, the very circumstance of its diminished quantity.

It is not to be doubted, therefore, that the general adoption of the two plain and practical rules, so perfectly in the power of every planter, of raising his own supplies instead of buying them, and picking out and preparing his cotton with proper care and attention, would do more to promote the prosperity of the cotton planting states, than all the *morus multicaulis* speculations and political paper nostrums that ever deluded a people with visionary hopes, while they afflicted them with real disasters.

There is another reform in our agricultural economy, to which every planter in South Carolina is invited by the most persuasive considerations, public and private. It is to adopt and steadily pursue a system of permanent improvement, not only in the soil, but in the buildings and fixtures of his plantation, and to abandon the improvident policy hitherto generally pursued, of exhausting the soil in the too eager desire to realize a large present income, without any regard to the future. It is absolutely distressing to contemplate the memorials of this wretched policy exhibited in every part of the state—a policy which, while it denies to the present generation almost all the rational comforts which alone make wealth desirable, leaves to posterity an exhausted soil, ruinous mansions, and a barren inheritance.

Now, it would not be too strong an expression to say that every dollar judiciously invested in the permanent improvement of his estate by a planter, would be worth more to his children than two dollars invested, as is usual, in the purchase of more negroes to cut down the forest and destroy the soil. We have reached a point in our agriculture, which imperiously demands a fundamental change in this respect. However the virgin soils of the south-west may palliate the folly of such a course, the alternative is distinctly presented to

us, of permanently improving our estates, or of deserting them. We cannot contend with the planters of Alabama and Mississippi, in a wild and destructive system, by which even they have sunk under embarrassment and ruin, with all their advantages of soil and climate. We can make up for our inferior soil and climate only by a superior system of husbandry. While they are exhausting their soil and preventing the natural increase of their slaves by a reckless system of pushing and driving, let us improve the fertility of the one, by resting and manuring it, and increase the number of the other, by moderate working, and by providing every thing necessary for their health and comfort. And I have no doubt that a South Carolina planter who shall limit his cotton crop to five bales to the hand, and rely mainly upon the natural increase of his negroes, will leave a larger estate to his children, at the end of ten or twenty years, than a south-western planter who follows the system generally pursued in that quarter, though he should make eight bales to the hand, and annually apply his surplus income to the purchase of land and negroes. Though they are really struggling for the benefit of their children, there is no class of men who do so little for posterity, and will leave so few monuments behind them, as the cotton planters of the south. What sort of an estimate must be placed upon wealth, and to what rational end can he desire it, who, with an income of ten or twenty thousand dollars a year, brings up a family of children imperfectly educated, in a log cabin, with scarcely the comforts of such a dwelling? A stranger travelling through our country could not be persuaded that it was inhabited by a race of wealthy, hospitable and enlightened planters, so few of the monuments and improvements that indicate a wealthy and prosperous community would meet his eye. And if, by one of those great political revolutions which overwhelmed the ancient Greeks and Romans, our race of conquerors, and our name only descended to posterity, what classic memorial, what substantial monument, would bear testimony that this "delightful region of the sun" had been once inhabited by a civilized and enlightened people, eminently distinguished for their industry, their wealth, and the freedom of their institutions?

In thus urging a more provident regard to the future in our general economy, it will be perceived that I have still kept in view the important object of diminishing the aggregate cotton crop of the country, by giving a more useful direction to a portion of the capital and labor devoted too exclusively to its production. It will be also perceived that I have made no disclosure or recommendation of any improvement by which large cotton crops may be made. I have intentionally abstained from any suggestion of this kind believing that every one may be safely left to his own impulses and his own resources on this point, and regarding over production as one of the greatest evils to which the cotton planting interest is exposed. Indeed, if I could now reveal a process by which our common soils could be made to produce two bales of cotton to the acre, I should have great doubt whether the revolution would be a blessing or a curse to that great interest. I am aware that as I have obtained some reputation for making large cotton crops, it may be supposed

that I preach one doctrine and practice another. But such a supposition would do me injustice. With the largest cotton crop I ever made—that of 1839—I combined all the other branches of economy I have here recommended. I have now a surplus of 1500 bushels of corn made that year, hogs sufficient to supply my wants, that have been fat enough to slaughter since July, and very large stocks of cattle and of sheep, the latter of which supply all the wool required for the winter clothing of my negroes; and a stock of young horses and colts fully adequate to meet the exigencies of my plantation. After making due provision for all these objects, it is of course the true interest of every planter to make as large a cotton crop as he can without over-working his operatives. In doing this, however, he should never lose sight of the great object of improving the productive power of his estate, instead of exhausting it.

To this end, it should be his constant effort, by manuring and resting the soil and by superior cultivation, to produce a given result from the smallest possible number of acres. It is scarcely possible to overestimate the value of this rule in the actual condition of the old planting states. Every resource for making manure should, therefore, be improved to the uttermost, without begrudging the necessary labor and attention. No labor exerted on the plantation is half so well rewarded. Every description of stock should be regularly penned every night in yards constantly covered with straw, leaves or other litter. The quantity of manure that can be thus made in a year is quite inconceivable to those who have not made the experiment. Corn should be habitually planted in old land, of a quality least adapted to cotton, and every hill should be thoroughly manured, scrupulously avoiding the miserable economy too often witnessed, of losing one half its utility, to save the inconsiderable labor required to apply it properly. I can bear personal testimony that by these means the crop per acre can be invariably doubled on soils originally strong. My corn is principally produced on level lands that were considered to be exhausted when they came into my possession, and yet by thorough and careful manuring, I have reduced the number of acres cultivated in corn fully one half, making more certain and abundant crops than I did before with double the number of acres and more than double the labor of cultivation. All the manure not required for the corn crop, should be applied to the most exhausted of the cotton lands, and it should be made an invariable rule, both in regard to corn and cotton, to list in and bury all the stalks and vegetable matter found upon the soil. My experience justifies the belief that this process alone, if commenced before the soil is too far exhausted, will perpetuate if not improve the fertility of originally strong and level lands, though constantly cultivated in cotton. In fact vegetable matter, as it was the principal element in the original formation of soils, so it must be in their restoration and preservation. Nature beneficently provides it to our hands, but we too often destroy it as if it were a nuisance, while we vainly employ our speculations and direct our researches to find out some more scientific means of improvement. In proportion as the quantity of land required for cotton and corn is diminished by the means proposed, will that be increased

which is left fallow, and for small grain. These, after one year's rest in good soils, and always before they become covered with broom sedge, should be fallowed in the autumn, carefully turning in all the stubble and weeds, with two horse ploughs adapted to the purpose.

On the process of cultivation, one or two remarks may not be unappropriately made in this connexion. One of the most prominent obstacles, both to a system of good cultivation and to a system of permanent improvements, is the common practice of overplanting. It may be not unaptly denominated a system of *wear and tear*, in regard to land, negroes, horses and mules. As one of its inevitable consequences, a planter almost certainly finds himself, when the seasons are in any degree unfavorable, in that uncomfortable condition usually expressed by saying "he is desperately in the grass." No man deserves the name of planter who gets into this predicament, except in very extraordinary seasons, any more than he deserves the name of general who carelessly permits himself to be surprized and surrounded by an enemy. For though the one may work his way out of the grass, as the other may cut his way out of the toils of his adversary, yet it is the hard knocks and sweat of the laborers in the one case, and the valor and blood of the soldiers in the other, that imperfectly atone for the incompetency of the manager and of the commander. It is my confident belief that when even one half the crop is permitted to become grassy, the future cultivation of the whole will require double the labor that would have been otherwise necessary, and with all that, it will be impossible to make a full crop, especially of cotton. In our climate and soil in the upper country, the only means of avoiding an immense destruction of immature bolls by the autumnal frosts, is to push the growth of the cotton from the beginning, by thinning and preparing it to mature as early as it can be safely done, and never permitting its growth to be delayed for a single day by want of working. For what is lost in this way can never be recovered; and I have no hesitation in saying that six acres of cotton to the hand, properly cultivated, will produce a greater result with one half the labor than ten acres to the hand, cultivated in the rough and imperfect manner but too common even in this state, and generally prevalent in some others. In adopting it as a rule, therefore, to plant no larger crop than can be cultivated in the most perfect manner, a planter will best consult every view of sound economy and even the predominant desire to make a large cotton crop.

In the cultivation of a crop I know no rule more important, and which is more generally violated, than that of *doing your work thoroughly well, cost what labor it may*. More labor is improfitably wasted and more crops injured by bad cultivation from neglecting this rule, than from any other cause. The last strokes of labor required to complete any operation are doubly, often ten times as valuable as those used in the previous stages of it; and yet these are the very strokes usually omitted; in an improvident haste to 'get over the crop,' as it is expressed. The very causes which generally tempt managers to slight the work—wet weather and grass, for example—are those which most imperiously demand the strict observance of the rule I have laid down.

One of the consequences of over-cropping and bad working which is most to be deprecated is the necessity they create, and apology they offer, for permanently injuring the soil by excessive ploughing, and what is still worse, ploughing in improper seasons. I believe that it may be truly said that in the upper country at least, double the quantity of ploughing is done in cultivating cotton, than can be justified by any sound theory. Every ploughing which turns up fresh soil to the burning rays of a summer sun must tend to exhaust its fertility. But it is more important to remark, that nothing which folly can inflict on the soil, will so certainly reduce it to a mere *caput mortuum*, as the murderous practice of ploughing it in wet weather. There is but one way for a planter to avoid these evils, and that is by so planting and so conducting his operations as to be habitually ahead with his work.

#### ON THE PRESERVATION OF WOOD-LAND— THE CULTIVATION OF THE LOCUST TREE, &c.

For the Farmers' Register.

*Mr. Editor.*—The value of many farms, in various parts of our country, has already been greatly impaired by the improvident destruction of nearly all the timber upon them. I can designate a number of farms in my own neighborhood, the value of which would be enhanced from one to three thousand dollars, by an abundant and convenient supply of timber for ordinary farm purposes. Upon some of them, otherwise extremely valuable, there is not sufficient timber to renew the decaying fences, much less to supply the ceaseless demands of the voracious fire places. Our ancestors, in gratifying their immediate wants, seem to have acted upon the considerate principle of the enlightened British statesman in the House of Commons, who, in reply to the arguments of a brother member drawn from considerations of duty to posterity, indignantly exclaimed, "D—n posterity—what has posterity ever done for us?" I do not know, however, that we are more considerate than our fathers. To sacrifice the future for the present is the great infirmity of poor, frail, short-sighted man. Instead of improving our old fields, we still continue almost wantonly to destroy large bodies of valuable timber, regardless of posterity, and forgetting that while destruction is the work of a day, reparation may require the lapse of an age. The permanent value of our farms, in many cases, would unquestionably be enhanced by the preservation of our forests. Our wood-lands in old settled neighborhoods, and particularly in the vicinity of towns and villages, are becoming every year more and more valuable, and will soon be the most valuable portions of our estates. I have known the wood upon land in the vicinity of a town in the Valley of Virginia sold at \$40 an acre, double the price the cleared land would itself have commanded. Under these circumstances, a few plain remarks with regard to the preservation of timber where it exists, and the re-production of it where it has been destroyed, may not be without utility to some of your readers.

In the first place, a sufficient body of timber to supply the wants of every farm should be appropriated exclusively to that purpose. This land

should, if possible, be fenced in, to prevent cattle from browsing upon and destroying the young and growing timber. It might, however, be kept as a hog range, and would be valuable for this purpose.

In cutting timber for fuel, grown and dead trees, not valuable for other purposes, ought invariably to be selected. Young timber should be sacred from the woodman's axe. He ought never to be permitted, as is too frequently the case, to range the woods at pleasure, and destroy the most valuable timber; young hickories for instance, because they make the best fuel. The choppers ought to be instructed to trim up their tree tops closely, by neglecting which, an immense quantity of wood is lost on almost every farm—to cut their stumps low—to spare the young timber as much as possible, not destroying a single tree unnecessarily.

If some of the improved stoves or air furnaces were used instead of fire-places, our houses would be infinitely more comfortable, while an immense expense would be saved in the destruction of timber, and in cutting and hauling wood. On many of our farms a team and two or three hands are employed almost constantly during the winter in procuring and cutting wood.

A great deal of timber and hard work might be saved by a more judicious system of enclosure, by abolishing all unnecessary cross fences, and laying off our farms as compactly as possible. Worm fences, those pests and abominations, ought to be universally proscribed, and straight post and rail fences of durable materials, or stone fences, substituted in their places. In cutting timber for rails, buildings, farming utensils, &c., it will be recollected that experience and science have both demonstrated, that *timber cut in the summer will far outlast that cut, according to the common practice, in the winter.* The tops of rail timber ought to be carefully trimmed up for fuel, and your cook will thank you for a few wagon loads of chips. "Gather up the fragments that nothing be lost," is a divine maxim, no where more applicable than to the diversified operations of the farmer.

Upon farms deficient in timber, and indeed upon all farms where it will flourish, I would most earnestly recommend the cultivation of the locust tree. I do not know how a few acres can be more profitably employed on most farms, than in growing this invaluable timber. In addition to your regular plantation, a great many trees can be grown along permanent fences, public roads, on rocky spots incapable of cultivation, and scattered about through your woods, where the timber has been cut down, or stands too thin. In this manner, and by the judicious and tasteful disposition of clumps of trees in particular situations, our farms would be vastly improved in beauty as well as increased in value. Exhausted fields may be redeemed from sterility and converted into valuable pastures by planting them thickly with locust trees. In our forest fields we generally find a patch of sweet green-ward about the locust trees. To cover your fields with the locust, you can set out the trees at such regular distances as you wish them to grow; if pretty thick, the timber will be taller and better; or you can plant, say 30 or 40 trees to the acre, and by cutting off their roots with a sharp coulter plough after they have grown a few years, your ground will soon be covered with a locust thicket. When your plantation is once

established, you are sure of an endless succession of locust trees; for every tree you cut down will produce sufficient shoots for a dozen successors. By pursuing this plan, you can enclose your farm in a few years with a post and rail fence of locust, which will last from seventy to one hundred years, to say nothing of the large sums you might pocket from the sales of timber. What an immense expense you would thus save to yourself, your children, and your children's children!

Young locust trees can be raised in abundance from the seed, which at this season of the year, can easily be gathered in any quantities from old trees; the larger and more vigorous the better. The seed must be scalded in hot water to soften its hard envelope, or it will not vegetate for years. Plant at any time in the spring thickly in drills, say two feet apart; keep the weeds down the first year with the hoe or plough, and your labor is finished. You can transplant the second, third, fourth, or fifth year, or later at pleasure. The roots left in the ground in digging up the trees will secure you a permanent locust nursery. In planting out your trees leave the roots pretty long; trim the tops off, unless the tree is very small; set the trees firmly in the ground, as deep as they grew naturally, *and no deeper*, and leave them to themselves. You may set them out at any time from the fall of the leaf in autumn, to the bursting of the bud in spring. Trim your trees up if not planted closely, and they will have taller and better stems. Keep cattle out of your orchard until your trees are out of their reach. Follow these plain directions, which I have tried with great success upon a small scale, and in a few years you will have an abundant supply of the most valuable timber, which will add vastly to the value of your farm.

I wish I could persuade all your readers to promote the comfort and beauty of their homes by embellishing their farm-houses with ornamental trees and shrubbery. Plant locust trees, if nothing else. I intend, however, to ornament my yard, as far as may be practicable, with specimens of every tree to be found in our forests, to be procured from time to time as my convenience will permit. The example of the late Judge Buel in this, as in other respects, deserves the imitation of us all, and is full of encouragement. "Twenty years ago," says he, "at forty years of age, we commenced the cultivation of what was termed a barren, untameable common, not an acre of which had been cultivated, and on which a tree or shrub had never been planted by the hand of man. We have now growing in our court-yard, comprising about half an acre, and in the highway in front of it, fifty species of forest and ornamental trees, many of them forty and fifty feet high; more than fifty species of ornamental shrubs, not including the rose, besides a vast number of herbaceous, ornamental, and bulbous and flowering perennial plants—the greater number of which, in all their variety and hue of foliage, flowers and fruit, may be embraced in a single view from the piazza. Most of our fruits have been raised by us from the seed, or propagated by grafting; yet we can now enumerate more than two hundred kinds, including varieties, which we are in the habit of gathering annually from the trees, vines, &c., of our own planting."

With this instructive example before their eyes, if any of your readers fail *this spring* to plant out

orchards of apples, peach, pear, plum, cherry, damson, quince trees, &c., they deserve to be deprived of fruit for the remainder of their lives. From about a dozen trees of well-selected fruit, I had last year the greatest abundance of delicious apples from the 1st of June until the 1st of January. But my sheet is full. **PLOUGH-BOY.**

Rockbridge, Va., Feb. 1st, 1841.

## HOGS.

From the Kentucky Farmer.

If Kentucky may be said to be the "breeding state," in reference to horses, mules and cattle, the distinction may perhaps be no less justly claimed in reference to swine. And if the number of varieties from which selections may be made, in view of making new crosses, and promoting and perpetuating increased improvements, be deemed a fortunate facility for affecting the object, it would seem that we are peculiarly favored. Of the names of different varieties, all claimed to be of "improved breed" and possessing peculiar excellencies, we remember, just now, the following: Berkshire, (black with a little white); white Berkshires; Woburn, (sometimes called Bedford); Bedford, (distinct from the Woburn); Chinese; Neapolitan; Leicester, Lancashire; Irish grazer; Russian; Byfield; Thin-rind; and there may be others. And each variety has its sturdy advocates; and no doubt each has its peculiar excellence. But out on such a wide range, how is an inexperienced breeder to choose intelligibly? It is true we have the awards rendered at the fairs of the agricultural societies; we have reports of great weights attained at an early age; we have the positive assertions of A and B that this and that breed are the very best, without the least doubt; and we have the "fashionable taste" here in favor of certain breeds, as well as in reference to the breed and color of cattle. But after all, we have not all the facts, which would satisfactorily conduct the judgment to an intelligent decision and choice. In saying this, however, we do not mean that facts are wanting to prove the value of the various breeds. They do exist, but they are not made known. Neither do we doubt the sincerity of the advocates of the various breeds. Nor, for ourselves, can we permit the inference that, on this important subject, we have no "opinion of our own." We have an opinion, (mind, reader, we say an *opinion*—) but like certain politicians, we'll keep that to ourselves till it is wanted. It would be idle for us to state our opinion that this or that breed is the best, when we should instantly be met by the counter assertion of the advocates of twenty other breeds whose facts might prove to be as much in point as our own. We have no taste for engaging in a controversy in which we confess ourselves deficient in some of the leading facts by which its merits should be decisively determined.

But we are circuitously aiming at a point to which we meant to make a direct approach. We say then, the facts now before the public, in reference to the merits of various breeds of hogs, are not decisively satisfactory. We have seen the report of no experiment by which the matter has been indisputably settled; and hence the nume-

rous advocates of various breeds. The reports of great weights attained at early age and of premiums given to individuals of various breeds, are not decisive of relative superiority; for we know that the animals have been kept, pampered in a manner impossible to be adopted in the general economy of farm management. If a pig, stuffed daily to bloating, with every description of nutritious food, shall out-weigh another at a given time, it does not conclusively prove, we imagine, that the breed of which he is an individual is a better one for farm-stock. But, at the same time, we confess, it by no means proves it a worse. Yet the test is not a fair one; and we propose a new mode of settling the difficulty. Let some unprejudiced farmer who is not engaged in the "pig business," take any adequate number, say twenty, fifty or a hundred pigs of each of several of the vaunted breeds, of like age, and give them, in all respects, precisely the treatment and keep which are commonly bestowed upon swine. It is not, and cannot be, the custom here, to put stock hogs in pens and gorge them. We can't adopt, for general farm economy, the system of manufacturing pigs for show. We must raise pork for profit; and the breed most profitably under the system of economy which the circumstances of the country compel farmers generally to adopt is, unquestionably, the best breed—the assertions of pig dealers to the contrary notwithstanding. Let this mode of keeping be adopted, and the result reported to the public; and then we shall know more about the subject. It is out of the question to talk of betting upon one or two individuals, kept in a most extravagant manner that will cost more than the pork is worth. But we shall be told that no breeders can spare a sufficient number for such an experiment—the demand for pigs is too great and pressing; and besides they are too valuable to be slaughtered—they must be kept for breeders. It is to be hoped the day will yet arrive, when, in reference to improved cattle as well as hogs, some of the vaunted breeds will be devoted to the legitimate objects of making beef and pork. We shall then, at least, have some accurate means of testing relative merits. What we have said is not to be taken in an unfavorable light towards any of the improved breeds. We confess the superiority of many of them, from the evidence we have; but we want more conclusive evidence. Let those, therefore, who advocate this or that breed, join in the purposed experiment. If they are so confident as they profess, they have nothing to fear; and even if they should be beaten, their own interest requires them to know it. It may to some, be a very profitable business to mislead (innocently) others, but it is extreme folly to deceive themselves. Every intelligent friend of genuine improvement should be willing even to have his own favorite stock beaten, if done fairly; and he ought to rejoice in the result. The sensible breeder, finding himself beaten, will with equal good nature and sound judgment, procure the better and put away his own. After Eclipse beat Henry, Mr. Johnson wisely bought the former.

We published (in vol. 3. p. 142) an experiment of Benj. Gray, esq. of Woodford, with the half blood Thin-rind. He treated them in all respects as ordinary stock and reported the result to the public. It was a highly satisfactory one, and

spoke well for this breed, so much ridiculed and derided by the breeders of other varieties. We do not pretend to say that other breeds would not turn out as well or better; but the same kind of proof has not been furnished.

We presume now, if there is no herd of thorough bred swine to report upon, that at least numbers of part bloods have been slaughtered this fall. Let us hear from them. Come now, ye advocates of Berkshires and Woburns and other breeds—report your ordinary keep with your vaunted breeds, and give us your arguments in avoirdupois. Show us a lot of half bloods that, kept in the manner of Mr. Gray's despised Thin-rind—that is, in the ordinary manner of raising stock hogs—will make more net pork. Now we doubt not, some of the "eminent breeders" will think we talk very like a fool, in asking them to show facts relating to their stock, against those referring to such an *unfashionable* breed as the Thin rind; and some of them will even affect to be a little angry with us. But we can tell them an old proverb, that he who loses his temper loses his argument. So they need not be offended with us; we mean no harm to any of them, but good to all; and if any grow ill tempered, we shall only laugh at them. Undoubtedly many part bloods have been slaughtered this fall—let's have their keep and weights.

T. B. S.

From the Kentucky Farmer.

#### MEASURING CORN IN BULK,

*Equal bulks of corn in the ear, grown on different soils yield different products of shelled grain.*

The following communication is made public because it presents considerations of some interest to the farming community. Although it is believed by many intelligent farmers that a bulk of corn in the ear yields more than half its measure in shelled grain, the general practice adopts the standard used in Virginia and South Carolina; that is, a bushel of ears shells out half a bushel of grain. The idea that equal bulks of corn in the ear, grown on different soils, yield different products of shelled grain, is new to us. We were aware that corn grown on uplands, is heavier than that grown in bottoms; and we believe that grain grown in high latitudes is harder and heavier than the product of warmer climes. There is also a difference of product in shelled corn from equal bulks of ears, owing to the relative size of the ears—the smaller ear yielding more shelled grain.

As to the influence of various soils in deepening the grains on the cob and enlarging the diameter of the cob, we have no information. These subjects ought, however, to be investigated. We are generally too deficient in accurate knowledge of the facts which concern many branches of rural economics. Experiments should be instituted and reported.

Mr. Ruffin no doubt could furnish interesting facts, through his invaluable Farmers' Register, on the subject indicated, as he has already done on so many others of deep importance.

T. B. S.

Llangollen. Nov. 13, 1840.

To T. B. Stevenson, esq.—Dear Sir:—In the "Kentucky Farmer" of 7th inst. there is published a rule for measuring bulks of corn by Mr. Murray, esq. of South Carolina. It is very simple and of easy application.

But although in Virginia and S. Carolina the assumption that it takes two bushels of corn in the ears to make one of shelled corn, is admitted and acted on in their measurement, *here, in Kentucky, that assumption is not admitted.* The proportion of shelled corn is certainly greater than one half of the bulk of ears. What is the proportion here? I mean that (if any) which is established by common consent of the people. Is there any? If there is not, there should be; because sales of corn in the ear are very common, and there should be an uniform mode of adjusting the proportion. In different neighborhoods I have heard that different practices in this matter prevail. It is however, true, that any fixed proportion (although such is necessary) can only be an approximation to the truth, as the different varieties of corn shell out very different proportions of grain. The Baden, for instance, in this country, shells out eleven quarts to the half bushel of ears, equal to eleven-sixteenths of the bulk of corn; while some varieties shell out only nine-sixteenths of grain here in Kentucky. If in Virginia and South Carolina the same varieties should only shell out eight-sixteenths or one-half that here shell out eleven-sixteenths what can be the cause of the difference? Certainly not difference in fertility of the soil alone; for some lands on the Dragon swamp, Matapony, Chickahominy, &c., in Virginia, are as rich as our best lands here, and will produce as great a bulk of unshelled corn to the acre. Those rich lands in lower Virginia are differently constituted from ours. Here, we have more alumine and lime; there, more sand and as much vegetable matter. Is there in clay and lime, a tendency to produce greater depth of grains in Indian corn, and in sand to increase the cob or husk, on which the grains grow? Do the *marled* lands of lower Virginia produce a greater proportion of shelled corn than sandy lands, which, *unmarled*, produce an equal bulk of ears? Do the clayey lands in Virginia shell out more than the sandy lands producing the same bulk of ears? If so, obvious means of increasing the product are indicated.

You correspond, I believe, with Mr. Ruffin. He, I presume, through his agricultural friends, could obtain information on these points.

A bushel measure is rather too small for our Kentucky crops of corn, especially in such years as this when our Baden corn is yielding from fourteen to sixteen barrels to the acre. This variety, notwithstanding its great yield, is unpopular on several accounts. The ears, being not large, there is more shucking; and this operation is harder to perform than in the ordinary varieties, as the shucks adhere with greater tenacity to the cob; and then it takes so many ears to make a barrel or to feed a horse. This last objection will soon be obviated by the soil and climate of Kentucky. The ears are getting larger in every successive crop.

If we were to assume half the bulk of corn to be the quantity of shelled corn, as they do in Virginia, the following rule for the measurement is, an approximation sufficiently near for practical purposes.



Find the cubic contents of the bulk of ears in feet. Multiply them by 8 and cut off the two right hand figures and you have the barrels of shelled corn. Thus :

12 long.  
11 wide.

132  
6 deep.

792 cubic feet.  
8

62,88 equal 63 bushels of shelled corn.

Yours, very truly,  
JOHN LEWIS.

[We regret that the calls so courteously made above upon our information must be unavailing. We only know from former observations and trials, (made more by accident than design, and not worthy to be named as experiments,) that the proportion of grain to a barrel measure of ears, even of the same kind of corn, was variable, and often fell below half the measure of ears. It seems reasonable that corn produced in great perfection, or on the best soils and with the best seasons, should have more grain in proportion to the cob, than under reverse circumstances. We shall be glad to obtain facts and opinions on this subject from any of our better informed readers.—ED. FARMERS' REGISTER.]

#### VARIETY AND EXTENT OF VEGETABLE LIFE.

From the Dr. Roget's Bridgewater Treatise on Animal and Vegetable Physiology.

If we review every region of the globe, from the scorching sands of the equator to the icy realms of the poles, or from the lofty mountain summits to the dark abysses of the deep; if we penetrate into the shades of the forest, or into the caverns and secret recesses of the earth; nay, if we take up the minutest portion of stagnant water, we still meet with life in some new and unexpected form, yet ever adapted to the circumstances of its situation. The vegetable world is no less prolific in wonders than the animal. Here also, we are lost in admiration at the never-ending variety of forms successively displayed to view in the innumerable species which compose this kingdom of nature, and at the energy of that vegetative power which, amidst such great differences of situation, sustains the modified life of each individual plant, and which continues its species in endless perpetuity. It is well known that, in all places where vegetation has been established, the germs are so intermingled with the soil, that whenever the earth is turned up, even from considerable depths, and exposed to the air, plants are soon observed to spring, as if they had been recently sown, in consequence of the germination of seeds which had remained latent and inactive during the lapse of perhaps many centuries. Islands formed by coral reefs, which have risen

above the level of the sea, become, in a short time, covered with verdure. From the materials, of the most sterile rock, and even from the yet recent cinders and lava of the volcano, nature prepares the way for vegetable existence. The slightest crevice or inequality is sufficient to arrest the invisible germs that are always floating in the air, and affords the means of sustenance to diminutive races of lichens and mosses. These soon overspread the surface, and are followed, in the course of a few years, by successive tribes of plants of gradually increasing size and strength; till at length the island, or other favored spot, is converted into a natural and luxuriant garden, of which the productions, rising from grasses to shrubs and trees, present all the varieties of the fertile meadow, the tangled thicket, and the widely-spreading forest. Even in the desert plains of the torrid zone, the eye of the traveller is often refreshed by the appearance of a few hardy plants, which find sufficient materials for their growth in these arid regions; and in the realms of perpetual snow which surround the poles, the navigator is occasionally startled at the prospect of fields of a scarlet hue, the result of a wide expanse of microscopic vegetation.

From the American Farmer.

#### ADDRESS,

Delivered before the Queen Anne's County Agricultural Society, at its annual meeting, in July last, by WM. CARMICHAEL, Esq.

At our last meeting I was requested to deliver an address, and I propose to submit some subjects, which I deem worthy of your consideration.

The object of this association is to advance agriculture and to improve our lands. To that end it would be desirable to ascertain the original fertility of our soil, but on this subject we have but little information. The first settlers were too much occupied by their immediate wants and personal comfort to leave memorials of the quality of the soil in its early occupation; and tradition upon this, as upon all other subjects, is very uncertain. Some reasonable deductions may be made from its products, of which, information may be derived from the legislation of the state, and the records of our county police. We learn from these, that the first crop cultivated as an object of merchandise, was tobacco, (equally pernicious to the soil, and to the human constitution,) which continued the staple crop till the revolutionary war; a period of more than one hundred years. The grain grown in our infant settlements was for domestic consumption. Fresh lands grow the finest tobacco, and they were gradually cleared with a view to this crop, and cultivated till they were incapable of profitable production. New clearings were then made for this object, and there are perhaps but few of our arable lands which have not undergone this scourging cultivation. When none remained to be cleared, the planters, of necessity, resorted to the lands previously exhausted, to which they applied the manure collected on the farm. As population increased and trade expanded, bread-stuffs came into demand, and lands which would no longer produce tobacco, were appropriated to the growth of grain under the three-field system; under which



rotation of crops, one field was in wheat, another in Indian corn, and the third a common pasture for horses, cattle, sheep and hogs, till ploughed for the next crop. Some more provident farmers, after the wheat was gathered and secured, removed their stock to the stubble field, that the lands intended next year for corn, should have the benefit of a growth of grass in the fall; but generally, when the fields had not a crop of grain, the inclosures were neglected, and the stock roamed at large. Old habits and the facility of the system, have induced many to continue this course of husbandry, and they are but little incommoded by grass in their cultivation, or burdened with gathering heavy crops of grain. In early life I heard a farmer say, that a good growth of grass, on a field anterior to cultivation, was as beneficial as a light dressing of manure. I did not then, but now understand the correctness of the opinion. Putrescent manures impart immediate fertility, but its durable effects, I apprehend, result from the production of grass. It was formerly thought that the greatest advantage from this manure was to plough it down as soon as spread; now it is believed better to keep it near the surface. If this opinion be correct, it must result from the combination with the atmosphere. Putrescent manures act well on a sandy soil, but are lost after two or three grain crops. I have heard it said that they sink. In a stiff clay they are more lasting, but their more permanent effect is on a friable soil, which I have attributed to the superior production of indigenous or artificial grasses. I have some stiff white oak land, though for the most part the soil of my farm is friable, and my experience is that putrescent manures are more lasting on the latter. If this theory be true, that through the agency of grasses the soil derives permanent improvement, it is a matter of deep interest to farmers who hold stiff or sandy lands to seek the means of their production. Experience I deem the best instruction. Some of Mr. Hollyday's lands in Talbot, are the stiffest clay I have ever seen. Formerly after the wheat crop, June grass succeeded, but since his application of marl, with which his estate abounds, I have seen his fields covered with white clover. Two years ago in an excursion I made to the north, I learnt from a source in which I had confidence, that the newly cleared lands on the coast of Jersey, which are sandy in the extreme, after being dressed with marl, produce white clover. In some agricultural paper which I have lately read, I have seen it stated that some of the most fertile lands in Belgium were once blowing sands, which have been reclaimed by the application of lime with other manures. On some of my wood-lands, where the soil is light and poor I have strewed marl, and find they produce white clover, and I am now clearing a part of them of underwood for a sheep range. I have a general knowledge of the lands of this county, and believe there are but few which could not be brought to a state of fertility with profit by our own internal resources. Marl has been discovered in many districts, and I entertain no doubt that a diligent search would disclose much more. Upon our rivers and creeks marsh mud has been used with great effect, and I have understood from fresh branches, it has been found of great utility. Marl is generally found in our low grounds; raising and carrying it out is attended with no small

expense, but its value is great. Mr. Ruffin holds it to be indestructible, and if putrescent manures or vegetable matter which is necessary to its beneficial action be exhausted by hard and continued cultivation, that the marl continues in the soil and may be brought into action by application of putrescent manures, or the gradual accretion of vegetable matter. The soil of the Elk-horn Paradise in Kentucky is supposed to be inferior to none in the United States. It is there the finest hemp is grown and the finest pastures abound, and where Durham cows sell at from \$500 to \$1,000. The land is highly calcareous, and I have lately seen it stated that if it be exhausted by continued and severe cultivation, and suffered to rest, it soon recovers by the accretion of vegetable matter. In proof of the durability of marl, I will state a fact within my own knowledge. Mr. Edward DeCourcy of this county, late in life discovered a marl bank on his estate, which he determined to work. He drew out a few loads, but falling into bad health, the scheme was abandoned. This was twenty years ago; the spot is near the road leading to the family mansion, and the effect is unimpaired by time, and manifests itself on every crop. Marl is generally estimated in value by the quantity of shell it contains. This is not invariably a true test. When Professor Ducatel passed through this county, on his geological survey, I had two marl pits open, one blue and other yellow; he pronounced the yellow the best, as it contained the largest quantity of shell; I found upon using both, the greatest product from the blue; this I communicated by a paper in the Farmers' Register, and my opinion has been supported by the Hon. Dixon H. Lewis, of the House of Representatives, a gentleman of distinguished worth and talents. He states that the effect of blue marl on a cotton crop in Alabama, was greater than stable manure. Mr. Ruffin supposes that the color arises from a combination of vegetable matter. If he be right, it is a fortunate combination, as it will relieve the necessity of applying putrescent manures with marl, to a soil where there is no vegetable matter. I cannot pass Mr. Ruffin by without a just tribute. If Dean Swift's apothegm be true, "that he who causes two ears of corn, or two blades of grass, to grow where but one grew before, would deserve better of mankind, and do more essential service to his country, than the whole race of politicians taken together," then the claims of our politicians must wither and fade. Dean Swift lived not in the days of our Washington, Henry, and Jay, men illustrious for their virtues, and distinguished for their devotion and services to their country, at a period when patriotism was attended with peril. It is no uncommon error to form opinions from our immediate circle of observation. Dean Swift had been much about the British court, he had witnessed the daring and reckless ambition of the Duke of Marlborough, the heartless blandishments of the wily and accomplished St. John, and the dark and gloomy jealousy of the Earl of Oxford. The intrigues of the Duchess of Marlborough, the more subtle artifices of Mrs. Masham, were not calculated to inspire respect for female politicians. Without drawing comparisons between men engaged in different pursuits, in my opinion, in agricultural science, Mr. Ruffin stands unrivalled in our country. His 'Essay on Calcareous Manures' will remain a standard work, and his

writings in the Farmers' Register, are marked with sound sense and judicious observation.

Mr. John S. Skinner has again become the Editor of the American Farmer. I have taken it for the last year, and find it to contain many valuable papers on agriculture, horticulture and stock, and perhaps on the production of silk, seasoned with a little cookery. I think it claims the patronage of farmers, planters, graziers, and gentlemen of the turf. The age of speculative philosophy has passed by. The subtle theories of Hume and the dark oracles of Bolingbroke and Shaftesbury are but little known to the present generation; the perilous principles of Voltaire, Helvetius and Condorcet, were fully tested by Frenchmen in their terrific revolution. They converted civilized men into hordes of savages thirsting for each other's blood. Science has now taken a new and a better direction. Practical philosophy has become the ruling spirit. Agriculture is now esteemed among the liberal arts, and men of a high order of talents have enlisted in her service, of whom Sir Humphrey Davy, Sir John Sinclair, and the Count Chaptal are among the most distinguished. I have sometimes thought it strange that intelligent men, who on other subjects seek information from books and papers, on agriculture are satisfied with their own and their neighborhood experience. Our country, in common with the Eastern Shore, has suffered by the emigration of our citizens, and the transportation of the black population; we have not now sufficient labor for the cultivation of our lands. Some years ago the tide of adventure set to the south-west, and many were swept into the vortex. But few succeeded, and some returned with ruined fortunes and broken constitutions, and had cause to deplore that they had abandoned the home of their fathers in pursuit of sudden wealth. That large fortunes have been acquired in the new states by fortunate speculation, I readily admit; but for the purpose of agriculture, I think an exhausted farm might be purchased and improved to more profit than a new settlement made in the new states. Our domestic sources of improvement are abundant, and our facilities for market rarely surpassed. Our soil is equally adapted to wheat and Indian corn; all vegetables and fruits (with the exception of those of the tropics) which grow in all parts of the United States flourish here. Apples, pears, peaches and melons attain their highest perfection, and the Irish and sweet potato find a genial soil. Navigable rivers and navigable creeks run into every district; we stand in no need of turnpikes, canals or rail-roads, which are serious drawbacks to agriculture. That our impoverished lands can be rapidly improved we have abundant proof. The farm of Dr. Turpin, which adjoins this town, when purchased by the late Mr. Turpin was greatly exhausted. By his prudence and good judgment it soon became valuable, and I am pleased to see it continue to improve in the hands of his son. I have lands which I had ceased to cultivate, deeming the profits not equal to the expenses, which by a dressing of marl and a crop of clover are now in a state of profitable production; and I do not think I make an extravagant estimate when I say that a farm where an accessible bank of blue marl is discovered has added to its value fifty per cent.

The devastating wars prosecuted by the powers of Europe, for more than thirty years created

heavy demands for our bread-stuffs, and during that period wheat ranged from 150 to 200 cents per bushel. Since the general peace there has been a great decline in the price and a diminution in the products; for the latter, a variety of causes has been assigned, some have supposed the cooling of the fires in the centre of the earth; others that there is an occult native element in the soil necessary to its production which wears out by cultivation, which no means can restore. I have supposed the failure is to be found in more obvious cause—the progressive impoverishment of our soil, the inauspicious seasons, and the Hessian fly. This pernicious insect was unknown to our country till about forty years ago. It appeared first to the north, and some supposed it was brought over by the Germans, (in their provender) who our old enemy George the 3rd called to his aid to enforce his royal authority. This seems to be an error, as there is no such insect known in Germany. Perhaps, like many other insects, it is native to the country, and, like the tobacco worm and cotton fly, multiplies as cultivation advances. It seems to be a permanent evil fastened upon us, and we can only hope to lessen its mischiefs. Since I have been absolved from the weighty matters of the law, I have sought for information upon the habits and operations of this insect, to which I now add my own observation and reflection. It seems agreed that there are regular flights of the Hessian fly in the fall and spring, dependent, as to time, upon the state of the weather. I believe that it is the natural history of the winged insects, that they lay their eggs upon the leaves of trees or plants, and I have supposed that the Hessian fly, lays upon the blade of the wheat, and after the egg is hatched the maggot by instinct seeks the folds of the wheat where it is found. Animals and birds seek places of safety for their young, and the ties of nature are not dissolved till they can take care of themselves; but it would be placing the Hessian fly in point of sagacity before other insects of the same class, to suppose it sought the folds of wheat as a safe deposit for its eggs. My theory is, and I shall refer to some facts to support it, that if the egg is hatched on the blade of the wheat in its young and tender state, that its soft and smooth surface enables it to make its way and penetrate the folds of the wheat; but if the blade has some growth it becomes comparatively rough, and the maggot finds the obstruction too great for its strength and perishes. It rarely happens that wheat sown after the weather becomes cool is injured by the fall fly. Cool weather paralyzes stronger insects, as house and wood flies and mosquitoes. If wheat be sown in the fall soon after the fly is disarmed by the weather, in well improved lands, it will take good root by winter, and in the spring it will get such a growth that it will resist the fly after it is hatched, unless there be a very early burst of warm weather. You may esteem my views visionary, I do not advance them with great confidence, but they are not the result of random speculation. In 1838 I sowed two fields in wheat adjoining each other, one in October and the other in November; the soil for the most part was the same, both had been marled and otherwise improved and nearly equal in size. The field sown in October took good root before winter and grew off well in the spring; the field sown in November came up well, but was checked by the early frost,

and though its appearance in the spring indicated that it had survived the winter frost, it was feeble when compared to the other. It was taken by the spring fly, and I did not get more than half the crop reaped from the other. Last year I prepared a lot for grass. It had been highly improved by marl and putrescent manures. I desired to show the grass early, and at the same time to obtain a crop of wheat from it; the wheat was sown on the 22nd of September, and grass seeded on it. The wheat came up quickly and made a beautiful appearance, but was attacked by the fly in its early vegetation. This spring from its appearance, I entertained the hope that I should get some crop, but I did not gather the seed. I commenced my general sowing on the 7th of October and finished on the 24th. Some of the wheat last sown was a little damaged by the fly, but not materially. A gentleman whose farm adjoins mine commenced sowing his crop the 1st of October, and I understand his early sown wheat has been much injured. From these circumstances I have come to the conclusion that the best chance to escape injury from the fly is to sow after the state of the weather affords good reason to believe that the fall fly has been checked, and then to sow as quick as possible, that the wheat may obtain such root as will give vigorous growth in the spring before the fly comes out. I am aware that my notions may seem in contradiction to the experience of 1836 and 1817, when the failure in the crop was general; some gentlemen now present may recollect the early burst of warm weather in 1836. In 1817 we had summer days in March, which is impressed on my mind from this circumstance: Mr. Monroe was inaugurated president on the 4th, and some gentlemen at Washington were speaking of the splendor of the scene in the presence of the Portuguese minister, when he remarked that the brilliancy had been increased by borrowing a day from Brazil. This remark I learned from report. I did not attend the inauguration, and I take this method to say that I lament the increasing inclination among the American people for public shows and spectacles; they divert our citizens from the sober and solid pursuits of business. It is there the young and unwary are sometimes seduced into schemes of desperate and profligate ambition, by the master spirits who circulate through the country. History records that the declining days of the Roman republic, upon which the throne of the Cæsars was erected, was attended by banquets and revels, and marked by the exhibition of rhetoricians and gladiators.

Among the important inventions in agricultural machinery, Mr. Hussey's reaper may be justly esteemed. His first invention has for two years been in successful operation on the farm of Mr. Wm. DeCourcy, and I understand other gentlemen of the county have used them. I purchased one upon a new construction, which I preferred on account of the greater simplicity of its works. It broke, in the second day's cutting, in an important though not a costly part. I attempted to have it repaired by the agency of a blacksmith, but was not successful. Mr. Hussey came to my house near the close of harvest to put it in order; it did excellent work for part of two days, and for three days in my oat harvest. It saves wheat better than the most expert cradlers or hookmen, and in heavy wheat I think it will do the work of eight

cradlers. An advantage not the least in my estimation is, that it relieves men from heavy and exhausting work, which, in very hot weather, often produces disease and sometimes death.

Indian corn is the valuable crop of our country, not because our soil is unfavorable to the production of wheat, as some persons who are but little acquainted with its qualities have erroneously supposed, but on account of the properties of the two crops and circumstances connected with them. Wheat has many enemies to contend with: Hessian fly, severe frost, rust and scab, and storms in its maturation. Indian corn is a hardy plant; it is sometimes injured by the cut worm, the ant and the chinch bug, but lands which are in a condition to produce 20 bushels of wheat to the acre in a good season rarely fail to yield forty bushels of corn, if judiciously cultivated. We have months then to gather the corn crop. If wheat be not secured soon after it arrives at maturity it is lost. A large extent of country in the United States produces excellent wheat, and when a full crop is made, the price is generally depressed. Indian corn is a precarious crop, further north than Jersey and further south than North Carolina. They do not grow a sufficiency for home consumption; within these limits the eastern states get and must continue to receive their supplies. I understand under the high prices of 1838 and '39, corn was shipped from New Orleans to New York; but when corn is from fifty to sixty cents per bushel, I do not apprehend rivalry from that quarter. The cost of transportation is too heavy, and corn is liable to be injured in the hold of a vessel, particularly in passing through a hot southern climate. In the present year there has been a great fall in the price. The full crop of last year may have had its effect, but I consider the great cause is to be found in the extravagant and pernicious spirit of internal improvement. It has been ascertained that a certain number of the states to aid these companies have issued bonds and certificates to the amount of two hundred millions of dollars, and many of the banks by purchase or pledge have been dealing largely in these securities. The money paid out by them to the internal improvement companies has been abstracted from the ordinary channels of trade. This has led to embarrassment and derangement, and its kindred evils, low prices and a spurious currency.

I have submitted for your consideration matters of common interest to the cultivators of our soil; you may deem many of my notions visionary. If they shall excite a spirit of inquiry I shall be content. By tracing the errors of others we sometimes obtain just views and arrive at true conclusions.

WM. CARMICHAEL.

#### ASPARAGUS.

From the Southern Agriculturist.

The name of this plant is of Greek origin, signifying a young shoot before it unfolds its leaves. It is evidently a native of this country, being found wild in Essex and Lincolnshire. It is also found on the borders of the river Euphrates, in Asia, where it grows to a very large size.

Asparagus is said to promote appetite, but is not considered to afford much nourishment, and is

comparatively a vegetable of luxury. It occupies a large proportion of a gentleman's garden, and is seldom seen in that of the cottager. The young shoots are boiled a few minutes, until they become soft; they are principally served to table on a toast with melted butter; seasoned, they also make an excellent soup.

This vegetable is cultivated very extensively for the London markets; and it must appear almost incredible to those who have not witnessed the loads of this article daily heaped on the green stalls of the metropolis for the space of three months, that forty acres are under asparagus in the neighborhood of London at one time. Wil-mott, a great grower, at Deptford, has had eighty acres entirely under this crop.

Until towards the end of the seventeenth century, a large quantity of remarkably fine asparagus was exported from Holland, the deep, rich, moist soil of that country being genial to its growth.

Asparagus is propagated only by seed, which, as well as one and two or three-year old plants, may be purchased of the nurserymen or seedsmen; when a new plantation is formed, the latter practice is generally adopted in order to save time.

There are three varieties of the asparagus named in the seedsmen's catalogue, but there is a great similarity between them, and I doubt if these supposed varieties were cultivated in the same soil and atmosphere, whether there would be found any difference between them, except, perhaps, in the color. The following is a description of them:—

1. Battersea is famed for producing fine asparagus, the heads being large, full, and close, and the tops tinted with a reddish green color; this is the sort generally cultivated by market gardeners.

2. The Gravesend asparagus is more green topped, and not generally so plump and close, but is reckoned better flavored. Both varieties are held in great estimation.

3. The Giant asparagus is greatly extolled by the London seedsmen, on account of its size; but the author considers the secret to lie in the quality of the soil, for occasionally buds of immense thickness are produced in common beds; and in the Gardener's Magazine there is an account of sixty buds having been cut near Leeds, in Yorkshire, which weighed nearly seven pounds.

**Culture.**—The middle of March, [*February*], or thereabouts, if the weather is suitable, will be found a good time to sow the seed in quantity, according to the number of plants required for a small garden. A pound of seed will produce a requisite number of plants.

The seeds are generally sown broadcast on a four-foot bed, but by far the better way is to sow it thinly in drills about two inches deep and fifteen inches from row to row. It should be slightly trodden in, and the bed made smooth with the rake; the ground must be kept as free of weeds as possible, and stirred with the hoe two or three times during the summer. If the soil is not very rich, some good rotten dung must be dug in before sowing the seed, as strong one-year's plants are the best for transplanting. About the end of the following October some stable litter should be spread over the ground to protect the young roots from the frost.

The best ground for asparagus is a light, rich, sandy loam. The soil should not be less than two and a half feet deep. Before planting, it should always be trenched to the depth of two feet, and plenty of dung buried at the bottom, as no more can be applied there after the beds are planted. The ground can be scarcely be too well manured: for, although the plants naturally grow in a poor, sandy soil, it is found that the sweetness and tenderness of the shoots depend very much on the rapidity of the growth, which can only be promoted by the richness of the soil.

The ground being well trenched, manured, and levelled, the quarter must now be divided into beds four feet wide, with two feet alleys, as being the most convenient for cutting the shoots and weeding, &c. The work should all be done in fine weather, as the ground can be more easily worked, and the planting better performed, than if the ground is wet and cloggy. It is also a good plan to prepare and trench the ground a month or six weeks before hand. After the beds are marked out, and before the planting commences, a layer of rotten dung should be spread over the beds, and regularly dug in with the spade, taking care to reject all the stones which appear, as they are hurtful to the plants, and occasion inconvenience in cutting the buds.

The beds being prepared, and a strong stake driven in to the depth of two or three feet at each corner, about the middle of March, [*any time during winter, but if possible it should not be delayed later than February, though they will succeed even as late as March,*] if the weather is dry commence the planting. Take up the plants carefully with a fork from the seed-bed, and expose them to the air as short a time as possible; and, at the time of planting, place them in a covered basket, with a little sifted earth mixed with them.

The distance at which they are commonly planted is nine inches in the row, and one foot between the rows; so that, if the piece of ground to be planted is perfectly level, and the rows quite straight, every fourth row can be left to form the alley. The crowns of the plants are generally covered two inches with mould.

The method of planting is as follows:—Stretch a line lengthwise along the bed, nine inches from the edge, and with a spade cut out a small trench about six inches deep, turning the displaced earth to the other side of the trench, on the bed; and having the plants ready, set a row along the trench, nine inches apart, with the crown of the roots two inches below the surface, drawing a little earth upon them, just to fix them as placed. Having finished planting the row, cover them directly with the earth taken from the trench, raking it back regularly an equal depth over the crown of the plants. Proceed then to open another trench, a foot from the first; plant it as above; and in the same manner plant three or four rows to each bed. Then lightly raking the beds lengthwise, draw off any stones or hard clods, and dress the surface neatly and evenly. Let the edges be lined out in exact order, allowing two feet to each alley. If the weather at the time of planting is very dry, water them occasionally, till the plants are established.

An asparagus quarter should not contain less than a rod of ground; as it often requires that

quantity to furnish a single good dish. For a large family, about twelve or sixteen rods are generally kept in a productive state.

Nothing further will be required during the summer, than to keep the beds perfectly clear from the weeds; and the following winter to cover them with some rotten manure, to preserve the crowns from the frost; if, in the spring, the earth is found to have settled in any part, which in new-made beds is often the case, the deficiency must be made up with more mould.

The crop is permitted the two first years, and a great portion of the third, to run up to stalks, the beds being kept free from weeds, and the surface stirred. It is a common practice to sow onions, lettuces, or radishes upon the beds; but the author considers this practice injurious to the asparagus, especially after the first three years, as it must necessarily rob the ground of a large portion of its nourishment.

If very large heads of asparagus are required, they may be produced by planting them twelve or fourteen inches apart in the rows, and fifteen or eighteen inches between the rows. The ground must also be very rich and highly manured. The author considers this to be the method by which the giant asparagus is produced; as in the course of his practice, by pursuing the same plan, he has met with the same results.

After the beds are arrived at maturity, which is generally the third year after they are planted, they will require the following systematic mode of treatment:—

From about the middle of October to the latter end of November, is the time to give the asparagus beds their winter dressing. This consists in cutting down the decayed stalks of the plants, close to, or within an inch of the ground, and clearing the beds from weeds, drawing them off at the same time with a rake into the alleys to be buried, and spreading some of the earth upon the beds, which is called *landing up*. Then proceed to line out the alleys, the stakes that are placed at the corners of the beds forming a guide: the alleys must be dug one spade deep, and a good portion of earth spread over each bed, two or three inches thick, and then nicely levelled with the rake. It may be supposed by some, that in annual landing up the beds, they may in several years be considerably raised; but by the spring forking and raking, together with the repeated hoeings and clearing off weeds in the summer, and at the time of preparing for landing up in the autumn, a considerable portion of the earth is annually drawn off again into the alleys.

About the end of March, [*January*], or towards the middle of April, [*February*], before the buds begin to advance below, proceed to loosen the surface of the beds; introducing the fork slanting two or three inches under the surface, turn up the top earth near the crown of the roots, with care not to wound them. Then rake the surface of the beds level, and draw off the rough earth and hard clods into the alleys; also trim the edges of the beds, and surface of the alleys regularly and even. Loosening the bed in this manner enables the shoots to rise in free growth, admits the air, rains, and sunshine, into the ground, and encourages the roots to produce buds of a handsome, full size.

In general, transplanted asparagus comes up

but slender the first year; it is larger the second; and the third year a few shoots may be fit for gathering; and the fourth, the crop will be in good perfection.

The best method of cutting them is to scrape away a little of the earth from each shoot; then with a sharp-pointed knife, made on purpose, with a narrow blade, six inches long, and finely sawed at the edge, cut off the shoot slantingly, about three inches below the surface, taking care not to wound the younger buds, advancing below in different stages of growth. Asparagus is in the best condition for cutting when it projects three or four inches above the ground, and while the top bud remains close and plump.

The cutting season usually commences towards the latter end of April, [*March*], and should never be continued beyond midsummer.

Asparagus beds, with good culture, will continue to afford plentiful crops for twelve or fourteen years, after which the stools usually decline in fertility, and the shoots in quality; but the author has known instances of beds producing large and fine asparagus for a much longer period.

I have frequently observed in many gardens the depth of the alleys, which should always be kept filled up to within eight inches of the surface of the bed, as the roots of the plants extend as well as descend; if the alleys are left deep, by cutting down the sides of the beds and deep digging, the plants are materially injured.

The following hints may be useful to the young horticulturist. A bed twenty yards long, with four rows of plants, at one foot apart each way, will take two hundred and forty plants which at four years old will produce above one hundred shoots daily throughout the season; and the quantity will increase every year. The author has had more than fifty buds in the season, produced from one single root, the bed being in a high state of cultivation, according to the method previously advised. From the above statement, a calculation may be made as to the quantity of land required to be planted to supply the wants of the family.

Where asparagus beds run east to west, or north to south, and the alleys are well filled up they may be planted on the warm side, with a row of kidney beans of an early kind, which will not interfere with the cutting of the grass, and will produce sooner by a week or ten days than if sown in the open ground; or, occasionally where ground is scarce, a central row of early spring-sown cauliflowers may be planted, at thirty inches apart. The author has grown them remarkably fine in such situations, without any detriment to the beds.

Asparagus beds should be enriched with an addition of good rotten ~~dung~~, once every two or three years at farthest; the benefit of which will be evident in the quantity, as well as the size and quality of the produce. The ~~dung~~ for this purpose should be completely rotted, like that of old cucumber or melon beds. It should be applied after the stalks are cleared off, and spread two or three inches thick over the surface of each bed, and a double portion in the alleys; the beds being then slightly fork-dugged to bury it; after this, dig the alleys in the usual way, and spread a portion of the earth evenly over the beds. In this way the enriching quality of the manure will be

washed to the roots of the plants by the winter rains. [A more recent mode of culture, is to plant the roots in single rows, on small ridges, four feet apart, and near the surface. The object being the "enriching of the surface soil, and encouragement of the surface-feeding roots, in opposition to the usual practice of deep trenching, and deep manuring." The plan is said to have answered admirably, but we doubt whether the ridge system will answer as well in our climate as in Great Britain (where it has been introduced,) owing to the greater sultriness and heat of our summers. We, however, strongly recommend the surface culture. Let trenches be prepared from four to six feet apart, filled with manure, and the roots planted thereon, and covered three or four inches. The excellence of the shoot does not consist in its being blanched, but in having a rapid growth. Those who may wish to blanch them, may earth them up just before they shoot, or adopt the Austrian mode, and place over each a hollow tube twelve inches long. The large canes of our swamps would answer well for this purpose. The intervals between the rows can be cropped, the working of which will be an advantage to the asparagus. In the winter the manure can be applied over the plants, or what perhaps will be better, along the sides, and between the rows, which will also answer for the succeeding intermediate crop, for plants receive nourishment only from the spongioses, or extremities of their roots. Saline manures, such as sea-weeds, sedge, marsh, &c., are strongly recommended as manure, as well as pickles from meats, and even common salt. The produce from the surface system is said to be much greater and finer than from the old mode.] J. D. L.

#### NEW POST OFFICE REGULATIONS IN ENGLAND.—SEEDS SENT BY POST.

From the Gardeners' Magazine.

We have lately received not only seeds, cuttings, and scions, but even entire plants, and yesterday a shrub, roots and branches, (*Vaccinium humifusum*), in a penny letter. From Messrs. Sang, of Kirkcaldy, we received a prepaid packet very neatly done up, containing the seeds of twelve kinds of annuals, each with the name printed, and the price of the whole twelve only 1s. If this does not lead to the general distribution of every useful and ornamental plant of which seeds are procurable, the fault will be in the public, not in government. We only wish that the foreign postages could be lowered a little, that our ornamental annuals might be sent all over the continent; for, it is a fact that will not be denied, that annual plants, even those of warm climates, make a far more splendid appearance in Norway, Sweden, Russia, and the north of Germany, than they do in England, owing to the brighter sun and longer days of these countries during the summer season. Great part of the Californian annuals might be naturalized in the woods of Norway and Sweden, and many superior varieties of bread corn, and of pasture grasses and herbage plants, might be introduced into these countries by post, if the postage abroad were only a little lower. An interchange of seeds amongst all the curators

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of botanic gardens in Europe and America is a result to be anxiously desired, not merely by the botanist, but by the horticulturists and the farmer. If ambassadors were what they ought to be, matters of this kind would have been attended to long ago.—*Cond.*

#### MODE OF PREPARING SAUER KRAUT.

From the Penny Magazine.

The Germans consider the cabbage a more economical plant than even the potato; but in its natural state it could not form, as it does in Germany, a principal article of diet amongst the healthiest and stoutest part of the population, and it therefore undergoes a peculiar preparation, after which it is called "sauer kraut." Cabbage thus prepared in the German fashion has been recently introduced in the dietary of the British navy, and occasionally it may be seen at table in England, in the houses of private individuals. The following recipe for making sauer kraut is from a work entitled 'Germany and the Germans,' written by a gentleman long resident in that part of the continent:—"When the cabbage has arrived at maturity, or even beyond it, that is, when white and very hard (for the crops are left in the ground till late in autumn), the outer leaves are first peeled off, the cabbage is then divided, and the stalk entirely cut away. It is now placed in a machine, which sets in motion several sharp blades, that cut it much in the same manner as we do pickled cabbage, but finer. This process being completed, the whole is closely packed in barrels, and between each layer of cabbage is placed a sprinkling of salt, caraway seeds, and juniper berries. When the barrels are full, they are closely covered, and pressed by heavy weights. In three weeks or a month it is fit for use, and will keep good for years. Care must be taken, when any part of it is removed, that the remainder is left covered with its own brine. During the season for preparing the sauer kraut, thousands of persons in Germany are employed in cutting the cabbage. It requires four hours to boil, and is usually served with salt meat. The Bavarian method is, after it has been boiled, to mix with it butter and red wine."

#### ON COMMON SALT AS A MANURE.

From the Farmers' Series of the Library of Useful Knowledge.

Salt of various qualities is produced in several countries, and known according to the different sources from which it is obtained—whether from the waters of the sea, from salt-springs, or from mines. It cannot, therefore, be strictly called a mineral, unless when found in the state of rock-salt; yet partaking of the nature of that fossil, and not having here to consider its effects in any other light than as a manure, we deem it unnecessary to enter upon any discussion of its peculiar properties when manufactured, and shall, therefore, confine our observations to its effects upon the soil.

In consequence of the former excise duty, which has been only lately taken off, the use

of salt, as manure, has been upon too limited a scale to justify any positive conclusion regarding its merits\*. Indeed, like almost every question connected with experiments on agriculture, this has given rise to opinions so utterly discordant, as to leave the decision of its value in much the same doubt as when it was first broached. Statements have been brought forward by many eminent farmers, which, though made upon apparently strong grounds, and without any doubt of their candor, yet broadly contradict each other, and the evidence produced before the board of trade in 1817, and before a committee of the house of commons, appointed, in 1818, to consider the subject of the salt duties, although certainly in most instances loudly commendatory of its employment for the general purposes of husbandry, has left the subject of its application to the land in nearly similar uncertainty.

It was represented as operating as a manure upon arable land by its tendency to promote putrefaction, as well as by stimulating the powers of vegetation through its absorption of moisture from the atmosphere; as being destructive of weeds and insects, and a preventive of rust; as improving the herbage of grass-land, destroying the moss, and rendering fodder palatable which would be otherwise refused by cattle; and as acting as a condiment conducive to the health of all animals. The abandonment of the duty was therefore hailed by its advocates as a special boon to the agricultural interest, and it has certainly been proved in numberless instances to have been successfully applied to some soils under peculiar circumstances; yet, except in cases where its use has been rather governed by local facilities than by any conviction of its real value, farmers do not appear to have generally availed themselves of its advantages as a manure, though it is gradually creeping into use for live stock. It is, indeed, admitted on all hands to be noxious to the whole tribe of slugs, and worms of that description, though we have yet no proof which can be relied on of its preventing the ravages of the fly on turnips; its effects in correcting the faults of sour pasturage and spoiled fodder seem also to rest upon grounds which can hardly be doubted†. There are also proofs of its power in checking the rust in corn; for although that

disease has been generally attributed to the varying changes of the atmosphere, yet it was stated in the evidence of Dr. Paris before the salt committee, that it was the practice of many farmers in Cornwall to spread about 30 bushels of salt, the refuse of the pilchard fishery, weighing 56 lbs. each, per statute acre upon their land, a fortnight previous to the sowing of turnips; and they all agreed that they never had any rust on the following crop of wheat where this was adopted, though before they were greatly affected by it. In the course of a very minute inquiry into the causes of rust, undertaken some years ago in this country, and afterwards continued at different periods on the continent, it also appeared, that it was never experienced in the immediate vicinity of the sea, unless when the ground was greatly overmanured; and that when sea-ooze or sand was employed as manure, it was prevented\*. This, however, does not apply to the practice of *steeping seed-wheat*, which can only have the effect of purifying it, but cannot, it is presumed, prevent the grain from afterwards receiving infection from the air, and which, indeed, applies rather to *smut* than to *rust* or *mildew*. Its influence in forwarding the putrefaction of manure depends upon the quantity in which it is employed†; and although its property of absorbing moisture from the atmosphere, and retaining it in the ground, constitutes, perhaps, its chief value when applied to light soils and in dry summers, yet, on heavy land and in wet seasons, its power seems to have little effect: it has therefore fallen into disrepute with many persons who have tried it without due attention to these circumstances. It is, indeed, evident, that the extravagant expectations entertained of it by some, and the disappointment experienced by others, have been occasioned by the contingent nature of its character, which, depending not alone upon the amount in which it is used, but also on the quality of the soil and on the state of the weather, must render it occasionally ineffectual. That it contributes to the health of animals is a fact now universally granted; though its specific virtues when administered in different quantities to stock of various species, age, and condition, have not been yet sufficiently ascertained, nor have we

\* The duty amounted to about 30*l.* per ton, the original value being under 20*s.*; and although, in the preparation of the brine, there is a refuse part formed by the separation of the grosser particles from the pure salt, and which was for a long time sold to the farmers duty free, yet this was afterwards prohibited and the whole of the foul salt, which was produced in one of the districts of Cheshire to the yearly amount of near 120,000 bushels, was carefully swept away after the process of manufacture was completed, and then in the presence of the exciseman thrown into the river Weaver.

† Salt destroys vermin by making them void the contents of their bodies; such evacuations being too powerful for them to withstand.—Lord Dundonald on Chemical Agric., p. 138. See an experiment in proof of this, in the Farmers' Magazine, vol. xviii. p. 440, in which it is stated that grubs, full of food, when placed in fresh earth in which some young roots of grass were transplanted after being very slightly pickled with common salt, were in 24 hours reduced to mere skins, and two out of three dead. Also Johnson's Observations on Salt, 8th edit., pp. 8 and 10.

\* See the report of the Committee, p. 30; also Cuthbert Johnson's Essay on Salt, p. 49; Sir John Sinclair on the Rust in Wheat, Farm. Mag., vol. xix; Ibid., vol. xx. p. 435; and Sir Thomas Bernard on Salt, p. 278. It is also stated in Dr. Thomas Thompson's System of Chemistry, that "in the water given to plants which are natives of the sea-coast, a minute infusion of common salt would consult the natural circumstances of that description of vegetables, and that they languish without it;" which is confirmed by Professor Davy's experiments on the effect of different salts conveyed in water to the roots of plants as recorded in his Elements of Agricultural Chemistry, 4to., p. 296.

† If used in large quantities, it is antiseptic; but if moderately mixed up with composts, it has been found to promote the putrefaction of the vegetable and animal substances which they contain. The quantity has, indeed, been stated as high as a ton to the acre; but this is either foul salt, which has been used in the fisheries, or the refuse of brine which has been manufactured, and which cannot be estimated at more than one-half, or perhaps one-third, of the weight of pure salt.—Sir H. Davy, Elem. of Agric. Chem., 4to, p. 295; Cheshire Report, p. 237.



now to consider of its employment for that purpose. We therefore neither accord in all that has been assumed in its favor, nor yet in its disapproval; and limiting our examination to its operation upon the land, we shall now state some minutes of the experiments which have been tried, from which every intelligent farmer may draw his own conclusions.

**Experiments on salt.**—In Holland's Survey of Cheshire, instances of its influence in destroying weeds and insects are mentioned; and its effects on fallows are thus detailed:—

'To account for the difference of effect arising from the application of salt as a manure, we may refer principally to two causes: viz., a difference in the mode and degree of application, and a difference in the nature of the soils on which experiments have been made. The first of these causes must undoubtedly have the most important influence. Regarding its action upon vegetable matter as that of a stimulus, it is natural to conclude that its effects must be varied very greatly by the proportion applied. If used in large quantity, it has a tendency—like every other excessive stimulus—to disorganize and destroy the vegetable substances with which it comes into contact: when a smaller proportion is applied, or when it is mixed up into a compost and employed in this state, it may be regarded, by the moderate stimulus it gives to the action of the vessels in the plants, as a promoter of vegetation, and consequently as a valuable manure. In this respect its effects are analogous to those produced by a similar application of lime; the influence of both substances upon vegetation being varied greatly by the proportions employed. In some instances, as when the land is lying in fallow, it would appear probable that the application of salt might be productive of advantage, by effecting the destruction of all useless vegetable and animal matter. Its quantity would also be so far diminished by the time the seed was put into the ground, as to fit it for affording that degree of stimulus which is most beneficial to vegetation; for, by being mixed sufficiently with the soil before the grain is sown, it adds a strong nutriment, and ensures the best of crops.

To this some observations to the following effect are added by Sir Thomas Brooks, in his tract upon the salt-duties, from information obtained through Mr. Hollinshead, of Chorley, in Lancashire, a gentleman who devoted a great portion of his long life to a scientific and practical inquiry into the uses of salt as a manure.

With regard to the quantity to be applied\*, he observes, that 'When a farmer intends to fallow a piece of ground, he ought first to sow it with

such a quantity of salt as would be sufficient to destroy vegetation,—namely, 40 bushels per statute acre, which, by cutting and dividing the viscous substances in the earth, would reduce it into a proper state to become food for plants. The farmer must take notice that this salt is to be sown on the ground some time before he begins to work his fallows with the plough: the autumn will be the most proper season, in order to give the salt sufficient time to destroy the grass and other roots upon it, before he begins to work it. The salt, being thoroughly mixed and incorporated with the soil during the spring and summer following, will, while the land is under the plough, be reduced, by the time the seed is sown upon it, to that strength which is the most proper for effectually and vigorously assisting and supporting vegetation when the grain is in the ground. This method of sowing the intended fallows with salt will therefore serve very much to lessen the labor of the husbandman in working his grounds; for the tough and adhesive clods and lumps, which are generally so troublesome, especially upon clayey soils, will be so completely broken and dissolved by the operation of the salt as to give much less obstruction to the harrow at the first working.' Such is the practice which he recommends on deep loamy dry soils; but, for other corn lands, sown in the usual way after a spring ploughing, he advises the spreading of 16 bushels of salt per acre immediately after the grain is covered in by the harrow, and afterwards sowing 10 bushels per acre annually, by which means he affirms that 'these lands will be ever after considered exceedingly productive.'

In the Report of the Committee of the House of Commons, various experiments, are also stated in which salt has been applied to fallows: one, representing the crop as nearly treble in proportion to the rest of the same field, and both the grain and the succeeding crop of clover, as of a superior description; but it appears from the same report, on the testimony of respectable individuals, that in three of those cases it was of no use whatever as manure. In two of the experiments, however, the quantity has not been distinctly stated; and in the third, which was made with great accuracy, the utmost amount laid upon the land did not exceed 10 bushels in one instance and 12 in another; whereas nothing less than from 30 to 40 bushels of foul salt per acre can be employed upon fallows with any prospect of success.

On its application to corn, the following experiments in the field practice are taken from Mr. G. Sinclair's Prize Essay, communicated to the board of agriculture, in 1820†:

#### Wheat after barley.

Soil, without manure	-	-	-	-	-	produced 16½ bush. per acre.
—, dressed with 11 bush. of salt	-	-	-	-	-	" 22½ "

#### Wheat after flax.

Soil, with 11½ tons of spit manure	-	-	-	-	-	produced 16½ bush. per acre.
Soil, with 6½ bush. of salt on the surface	-	-	-	-	-	" 22 "

\* It should here be remarked that the quantity mentioned applies to *foul salt*, the strength of which is not more than generally one-third, or at the most one-half, of that of *pure salt*; if the latter be used, it should therefore be diminished in a similar proportion.

† Rep. of Salt Com. pp. 152, 162.

† This essay contains tables of the result of a great variety of experiments upon the comparative use of salt, lime, soot, dung, and oil-cake; as well as trials of the effects of salt upon wheat, when applied after various preceding crops, and affords much curious and important information.



*Wheat after beans.*

Soil, without manure	-	-	-	-	-	-	-	produced 11½ bush. per acre.
—, with 6½ bush. of salt on the surface	-	-	-	-	-	-	-	" 21 "

*Wheat after peas.*

Soil, without manure	-	-	-	-	-	-	-	produced 16 bush. per acre.
—, with 6½ bush. of salt with the seed	-	-	-	-	-	-	-	" 17½ "
—, with 6½ do. dug in with the seed	-	-	-	-	-	-	-	" 23½ "
—, with 6½ do. and 6½ bush. of soot dug in	-	-	-	-	-	-	-	" 20 "

*Barley after turnips.*

Soil, without manure	-	-	-	-	-	-	-	produced 12 bush. per acre.
—, with 5½ bush. of salt applied before sowing	-	-	-	-	-	-	-	" 28½ "
—, with 11 do. do.	-	-	-	-	-	-	-	" 28½ "

The experiments were unfavorable to the use of salt on *oats*, so far as they were then carried; but the quantity applied appears to have been too large to admit of a fair trial of its real merits.

Mr. Sinclair also mentions experiments on spaces of 36 feet square, manured with salt at the rate of 5½ bushels per acre, drilled with *Talavera wheat* on the 5th of November, and reaped on the 2d of August, which respectively yielded produce at the extraordinary rate of 91, 73, and 82 bushels per acre, when mixed, in the first instance, with the soil four inches deep, before sowing; sown, in the second, with the seed; and in the third, simply applied to the surface. On which he observes, that the result of this extraordinary produce upon these small plots of ground must not be considered erroneous, for that he has seen produce equal to upwards of 23 quarters an acre, although one-eighth of the ground was without plant. Such instances are, no doubt, rare; but experiments are usually conducted with greater care on small spots of ground than in fields of larger size; the quantity of land is accurately measured, the soil generally of superior quality, and the product collected to the last grain; whereas we all know that, in the common practice, there is much waste both in the reaping and the carrying of grain, as well as much ground lost in roadways and fences. The same result cannot be expected as in more extended operations, but such trials are valuable as affording evidence of the comparative advantages arising from different kinds of manure.

To this we have to add a recent communication from Mr. Sinclair, in reply to an application to him for some further information on the subject, in which he says, 'that the facts here stated may be depended upon; that his opinions of the utility of the manure remain unaltered; and to these experiments he refers, as the fullest evidence of his convictions on the subject.' But, with that candor which distinguishes every man whose object is unprejudiced investigation, divested of any bias to the promotion of a favorite object, he adds, 'that it is not free from anomalies, which time and further experience can alone reconcile.'

On the subject of *wheat and barley*, Mr. Cuthbert Johnson also mentions, in his observations on the employment of salt, that on his own farm, at Great Totham, in Essex, he had increased the produce of the former, upon a light gravelly soil, to the extent of 5½ bushels per acre, by the use of 20 bushels of salt. On the same land, he also states the result of the following experiments on *wheat* to have been:—

Soil, without any manure for four years, produced 13 bushels 26 lbs. per acre. Soil, manured with stable-dung to a previous crop of potatoes produced 26 bushels 52 lbs. per acre. Soil, with 5 bushels of salt per acre, and no other manure for four years, produced 26 bushels 12 lbs. per acre.

Another Essex farmer, Mr. James Challis, of Panfield,—whose soil is described as being of a loose, hollow description,—had a dressing of salt put on it in November, after the wheat was sown, of about 14 or 15 bushels per acre, which is also stated to have produced at the rate of 6 bushels per acre more than that which was not dressed, and was considered to be 20s. per load better in quality. Several experiments, indeed, have shown the grain to be heavier, in proportion as the quantity of salt was larger. Other accounts are likewise given of the produce of wheat crops when manured with stable-dung, in comparison with salt, which are so largely in favor of the latter, that we fear to repeat them, lest they should appear to throw a doubt over the accuracy of the statement\*.

On the subject of barley dressed with salt, Mr. Ransom, of Sproughton, in Suffolk, says that 'it presented no difference of appearance to the rest of the field, until a fortnight before harvest; the salted crop was then brighter, and about one week forwarder than the rest of the field; and the following were the results when carefully cut and measured:—

Soil, without any manure, produced 30 bushels per acre. Soil, dressed with 16 bushels of salt per acre, in March, produced 51 bushels per acre.

Regarding *root crops*, Mr. Cuthbert Johnson also mentions his having been informed by Sir Thomas Acland, that salt has been laid upon his farm at Killerton, in Devonshire, at the rate of 40 heaps of earth to the acre, in each of which heaps 33 lbs. of salt were well mixed, and let to lie a fortnight before being spread upon the land, which was afterwards ploughed three times, and then sown with mangel-wurtzel, which had roots that weighed 32 lbs. each. A field was also dressed for turnips; one-third with salt prepared in the same manner, one-third with lime, and the remainder with hearth-ashes. When the seed came up, the turnips appeared most promising where the hearth-ashes were; but, after the first month, they did not grow so fast as where the salt or lime was; after that time, the turnips

\* See a publication by the Rev. B. Dacre, entitled 'Testimonies in favor of salt as a manure and a condiment for cattle.'

where the ground was manured with salt grew faster, the green looked stronger, and at the end of the season they produced the best crop.

To this he adds the testimony of Mr. Collyns, of Kenton, in Devonshire, who says that 'barley and oats which used to yield only 15 to 20 bushels per acre, now yield from 40 to 45; the wheat is also much improved in quality but not so much as was expected in quantity. Thirty-five bushels of wheat have been produced from an acre, dressed with 10 bushels of salt; and from the same field last year, after the same quality of soil, 140 bags of potatoes. This year, however, it has only produced 20 bushels, though again manured with 10 bushels of salt; but the quality is very superior, and the root of clover in it is very fine and luxuriant.

From a communication by Mr. Davies Giddy on the culture of turnips, it appears that on a part of a field which had been previously exhausted, half a crop was produced, but totally failed on that part where the ordinary manure was laid without salt. In another instance three acres of land, which on the preceding year had borne a crop of wheat not exceeding 12 bushels to the acre, were ploughed before Christmas, and brought into fine tilth by the midsummer following. On each acre were sown 20 bushels of salt, excepting that two ridges, towards the middle of the field, were purposely left without it; and on these the turnips totally failed, though the remainder of the ground produced an abundant crop. It is further instanced, that four acres of land, completely worn out by successive tillage, were sown,—three acres with salt, at the rate of 25 bushels, and the remaining acre with 18 bushels, without any other manure; the crop was in general a good one, but was visibly the best where the greatest quantity of salt had been used\*.

Mr. Hare, of Beaconsfield, in Buckinghamshire, has used salt at the rate of 2 cwt. per acre on a large field of very gravelly soil, part of which was left without any manure, and the remainder dunged as usual; yet the turnips produced on the salted acre were just as good as those raised from any other part of the ground. In the following year, on another field of the same quality, he manured the whole of it with farm-yard manure, adding to one acre of the field thus manured 2½ cwt. of powdered rock salt; and on this salted and manured acre, he had a larger and a finer crop of turnips than was produced upon any other field of equal extent in the whole parish. Sir John Sinclair has also tried it, on a small scale, with equally good effect.

Some comparative experiments have been likewise made with salt and soot, as well as with stable-dung when applied in different proportions to carrots and potatoes, which produced crops at the following rates per acre. Those by Mr. G. Sinclair, of Deptford, were:—

No. 1. Carrots sown without any kind of manure, produced 23 tons. 9 cwt. 107 lbs. No. 2. 13½ bushels of salt mixed and sown with the seed, produced 30 tons 12 cwt. 79 lbs. No. 3. 6½ bushels of salt dug in previous to sowing, produced 44 tons 14 cwt. 17 lbs. No. 4. 13½ bushels

of salt dug in previous to sowing, produced 31 tons 13 cwt. 40 lbs. No. 5. 6½ bushels of salt and 6½ bushels of soot, dug in previous to sowing, produced 40 tons 4 cwt. 97 lbs.

Those of Dr. Cartwright, of Tunbridge, upon a ferruginous sand, brought to a due texture and consistence by a liberal covering of pond mud, were:—

Potatoes, without any manure, produced 157 bushels per acre. Potatoes, with 9 bushels of salt per acre, produced 198 bushels per acre. Potatoes, with 8 bushels of salt per acre, and 30 bushels of soot per acre, produced 240 bushels per acre. Potatoes, with 30 bushels of soot per acre, produced 182 bushels per acre.

The effect of salt mixed with soot is remarkable; the roots of the carrots in No. 2 were the smallest; in No. 4, the largest; and in No. 5, the healthiest. The experiments made by Mr. G. Sinclair upon potatoes, planted in a soil composed of three-fourths siliceous sand,—both without any kind of manure, and at the rate of 13½ and 6½ bushels of salt with the seed, as well as 13½ bushels mixed with the soil—left no room to doubt of the advantage of 13 bushels per acre, applied to the land previous to the planting, over the other modes of application; but the superiority in either case was not very great.

Those of Mr. Cuthbert Johnson, upon a light gravelly soil, were:—

Potatoes, without any manure, produced 120 bushels per acre. Potatoes, with 20 bushels of salt per acre, laid on in the previous September, produced 192 bushels per acre. Potatoes, with stable dung at the time of planting, produced 219 bushels per acre. Potatoes, with stable dung and 20 bushels of salt produced 234 bushels per acre. Potatoes, with 40 bushels of salt alone, 20 laid on in September, and 20 in the spring, after the sets were planted produced 192½ bushels per acre. Potatoes, with 40 bushels of salt, as in the last experiment, and also with stable dung, produced 244 bushels per acre.

The trials made by Mr. Forbes, of the Pine-field Nurseries, near Elgin, upon salt, when compared with farm-yard manure, as dressings for root crops, however, tend to show the latter to be in every instance superior; and also to prove that when used in a large quantity it is injurious to vegetation, as it will be seen by the annexed table that the crops were lighter in proportion as the amount of the salt employed was larger. It was laid on in the proportions there stated *per Scots acre*, and an equal measure of land was moderately dunged; but though it appears from the produce that only a very small spot of ground was devoted to the experiment, yet that will not invalidate its accuracy.

\* Dr. Cartwright remarks, 'that there is no reason to suppose that the effects of salt, when combined with soot, were produced by any known chemical agency upon each other. Were I to guess at the producing cause, I should conjecture it to be that property of saline substances by which they attract moisture from the atmosphere; for I observed those beds on which salt had been used were visibly and palpably moister than the rest, even for weeks after the salt had been applied, and this appearance continued till rain fell, when, of course, the distinction ceased. This property of attracting moisture had greater influence possibly on the soot than on any of the other

\* *Annals of Agriculture*, vol. xxvii.

† See his *Code of Agriculture*, 3d edit., note in the App., p. 40.

Salt, at the rate of	2 tons.		1½ ton.		1 ton.		½ ton.		Dung.	
	lbs.	oz.	lbs.	oz.	lbs.	oz.	lbs.	oz.	lbs.	oz.
Onions	8	0	8	4	10	8	15	0	20	0
Carrots	13	0	17	0	20	8	24	0	28	0
Turnips	30	0	32	0	30	0	27	0	34	8
Potatoes	11	0	11	0	12	0	14	0	24	8
Mangel wurtzel	39	0	40	0	41	0	40	0	40	8*

Salt has been tried against farm-yard manure after the rate of 15 tons per acre upon a light sandy soil, and no difference was observed in the crop of turnips. It has also been mixed with the seed of turnips, and sown in drills at the rate of 14 bushels per acre, but the seed did not vegetate, owing, as it was supposed, to its being too closely combined with the salt; for the ground having been again ploughed and harrowed, fresh seed was sown broadcast, which grew and flourished. When top-dressed with salt they have also succeeded, though no effect has been observed regarding their prevention of the fly; and when spread under furrow, the crop was eaten off by the beetle.†

Although the experiments on the application of salt to meadow and pasture land generally agree in their representation of improvement having been thereby effected in the quality of the herbage, yet we have to regret that they are so few and so inconclusive, as not to afford any decisive proof either regarding the comparative weight of crops thus manured, the season in which it may be the most advantageously applied, or the quantity in which it should be laid on different soils. In the Cheshire Report it is indeed said, that eight bushels of refuse salt, per acre, having been spread, in the middle of October, on a piece of *sour rushy ground*, and sixteen bushels on another part, the vegetation in a short time disappeared totally; and in the month of April following, not a blade of grass was to be seen. In the latter end of the month of May, however, a most flourishing crop of rich grass made its appearance on that part where the eight bushels had been laid; in the month of July, the other portion produced a still stronger crop; the cattle were remarkably fond of it; and during the whole of the ensuing winter, and for several years, the land retained, and still exhibited at the time this account was written, a superior verdure to the surrounding closes.‡ This, however, probably alludes to *pure salt*; for it is stated in Sir Thomas Bernard's pamphlet, that sixteen bushels of *foul salt* having been laid, in the month of April, upon a field, which, for many years, had borne a very dark-colored dry kind of grass, which neither horses nor neat cattle could relish, had ever since that time borne herbage which was perfectly green, and upon which stock of all kinds thrived remarkably.

The statements of its effects upon the *artificial grasses* are also too meager to be relied on, though the application of six bushels of salt to an acre

manures with which it was tried, as soot, from its acid and dry nature, may be supposed to require a greater proportion of water to dilute it than those substances which contain water already.—Communications to the Board of Agriculture, vol. iv. p. 370.

\* Gardeners' Magazine, June 1828.

† Cuthbert Johnson's Essay on Salt, 3d. edit., pp. 70, 72.

‡ Holland's Survey of Cheshire, p. 238.

of red clover, upon a good turnip soil, is said to have increased the produce, at the very least, 10 cwt. per acre; the aftermath, also, proportionably good, the cattle eating it down close, and in preference to every other part of the field. \* *Hay of all kinds*, when coarse, or injured by the wet of an unfavorable season, has, however, been very generally proved to be so far improved in its quality by the addition of a quantity not exceeding about a peck of pure salt to a ton of hay, thinly sprinkled over the layers in the stack, as not merely to be rendered palatable to stock, but in many cases to be consumed with even superior relish. When the crop has been much exposed to rain, it checks fermentation, and prevents mouldiness.†

We have refrained from reciting the arguments which have been employed to urge the use of salt as a manure, because we think it should rest upon practical proof, rather than upon theory, however specious; yet we cannot help remarking that corn grown in the neighborhood of the sea is distinguished by its superiority of weight as well as color; and that salt marshes are known to possess highly fattening properties when fed by cattle. It is, therefore, only reasonable to suppose, that the application of salt to the land may be productive of similar effects, and we have taken the foregoing extracts chiefly from those statements of experiments which have resulted in its favor, because they hold out the promise of its being advantageous: for every kind of manure is of such great importance to agriculture, that we wish to induce farmers who have not already experienced its effects, to make repeated comparative trials of it upon their own land. We say *repeated*, because we are convinced that nothing short of a continued series of trials can be decisive of its merits; and *comparative*, because in no other way can any safe conclusion be drawn regarding its competition with other manure. We must also remind them, that its cost is now so trifling as to put it in every man's power to satisfy himself of its value at a charge that is not worth mentioning; and that any one who fails to do so must be regarded as seriously inattentive to his own interests.

It would, however, be unfair to withhold all that has been written in opposition to its use; and among those treatises which are best entitled to attention on that side of the subject, are some prize essays in the papers of the Highland Society of Scotland, on 'Experiments with Salt as Manure,' which, though they leave the question of its value still in doubt, yet rather tend to throw discredit upon its employment; for, notwithstanding one of these writers—who is a farmer of experience—expresses himself in support of it, yet

\* Cuthbert Johnson's Observations on Salt, &c., 1st edit., p. 10.

† Sir Thomas Bernard on Salt, p. 276. Surveys of the N. R. of Yorkshire, p. 177; and of Derbyshire, vol. ii. p. 182.

others are decidedly unfavorable. One of these reports, indeed, which is both minute and apparently accurate, states that it was tried upon crops of potatoes, oats, barley, and turnips, as well as upon natural and cultivated grass. Refuse salt was applied, mixed with ashes in the proportion of three-fourths of the former to one of the latter, and laid on at various rates from sixteen to thirty bushels per acre, both drilled in, and as a surface dressing upon land in some parts unmanured, and in others well spread with the best farm-yard manure. On the oats and barley, however, no perceptible difference was occasioned by its use; and on all the other crops it appears to have been injurious. The deficiency in the amount of potatoes produced upon that part of the ground which was only salted was indeed comparatively enormous; for, in two instances in which it was laid in the drills, the crop was only one-third of that upon which dung was used alone\*.

In a paper published in the second volume of the Communication to the Board of Agriculture, the writer relates several experiments, in all which the application of salt, in various quantities, both on arable and pasture, was either completely or in a great measure unsuccessful.

Some statements to the same effect have likewise been lately published in the *British Farmer's Magazine*,† which show—

1st. That 24 bushels, equal to 1 ton of rock-salt, were ground into powder,‡ and on the 10th of April were sown on four separate roods of meadow land, at the rate of one-fourth, one-fifth, one-sixth, and one-seventh of a ton to the acre: on the 21st it appeared to have destroyed the grass on that part where the greatest quantity had been, but that was not the case eventually, as it afterwards recovered.

2nd. On the 14th of April it was sown on three equal portions of land, at the rate of one-fourth, one-fifth, and one-sixth of a ton per acre, on fallow, and on wheat growing, which was afterwards sown with red clover: on the 21st the weeds appeared to be destroyed, but at harvest time were like the rest.

3rd. At the same time it was laid at the rate of one-sixth of a ton per acre, on some fallow, which was afterwards sown with oats and clover.

4th. On the 25th of April, on the third ploughing for fallow, it was spread at the rate of one-fourth and one-sixth of a ton per acre worked and manured as the rest.

5th. At the same time, and the same rate, on the same ploughing, on some land that was sown with rape.

The above experiments were tried on a strong loamy clay, with a clay subsoil, and the result of the whole proved that they were not attended with any advantage.

6th. On the fifth ploughing of a good loam, it was laid at the rate of one-fourth and one-sixth of a ton for turnips, which had been regularly dunged, some of it being placed in the ridges before, and some after the manure.

Some potatoes, on the same land, were also similarly treated; but no difference whatever was apparent in their favor.

These trials appear to have been made under the personal superintendence of the writer, and the editor vouches for the accuracy of the statement. The result is certainly in extraordinary contradiction to those of other experiments, nor is it possible to account for it in any other way than by attributing it to the nature of the soils on which they were made. If to be finally relied on, it would prove 'that the use of salt, as a manure, is of no value on strong or loamy soils;' but we are so far from agreeing to that conclusion, that we think it only affords additional proof of the propriety of every farmer judging only for himself, through his own experience.

*Application of Salt.*—From what we have thus stated, it must be apparent that nothing decisive has been ascertained regarding either the quantity or the season in which salt should be laid upon the land. It appears, however, that its effects are most visible and satisfactory when applied to hot, dry soils, and in very warm summers; but on cold, wet land, and in rainy seasons, or under a humid climate, its powers seem to become neutralized, and of little value. We are of opinion that, on arable land, it will be found more advisable to lay it on before sowing, than either with the seeds, or afterwards as a top-dressing. If applied, for instance, to a clover ley, either a few weeks before seed-time, or immediately after the first crop is off, it would effectually banish the slug; and it has been justly observed that, if all stubbles (not laid down with seeds) were to receive a slight dressing of salt before winter, it would not only tend to keep the land free from the slug, but probably also otherwise benefit the soil\*.

In preparing the land under the fallow-process, it has been recommended to spread from 30 to 40 bushels per acre for the purpose of destroying the roots and insects in the soil, and breaking all the tough and adhesive clods which are found to be so troublesome in working the ground. This should be done in autumn, some time before the first ploughing; as the salt being thoroughly incorporated with the soil during the spring and summer following, its strength will be so materially reduced by the time when the seed is sown, that instead of injuring, it has been found to promote vegetation†. With regard to the destruction of insects, that object can, however, be attained with half the quantity; and we must again caution our readers against the indiscriminate recommendation given of the use of salt, without distinguishing whether it is *ful* or *pure*: on the application of 40 bushels of the latter, vegetation ceases.

When applied in composts, it is said to have been found more effectual than lime. It has been tried in Cheshire on barley and seeds, and greatly exceeded the most sanguine expectations that had been formed of it. A quantity of refuse salt having been also mixed up with earth, and another portion of the same earth with lime, the vegetation of that part of the field upon which

\* See the Proceedings of the Society, from November, 1820, to December, 1823, vol. vi.

† No. ix. vol. ii. p. 427.

‡ When broken into small pieces, it runs through a corn-mill, and can then be ground as small as may be desired.

\* *British Farmers' Magazine*, No. xiv. p. 66.

† Hollinshead on Salt as a Manure, 2nd edit., p. 17. Sir John Sinclair's Code of Agriculture, 3rd edit., p. 38.

the salt was laid was by far the healthiest and the most vigorous\*. In Ayrshire it has been mixed with 32 bushels of lime-shells, and either spread singly or made up into a compost with 40 cart-loads of peatmoss, and has thus been found peculiarly favorable to the growth of wheat and beans. In those parts of the coast of Cornwall where the pilchard fisheries occasion considerable quantities of salt to be condemned, it is also much used as a preparation for turnips in composts mixed up with seaweed, and spoiled fish, dung, and rotten slaty earth, in various proportions, to which from 40 to 60 bushels of lime are commonly added. The quantity of this kind of compost commonly applied to an acre, is usually about a ton of the fish and salt,—more or less as the fish prevails, and in that country it has been long considered as a most valuable and lasting manure, though probably its effects may be at least equally due to the oil and refuse fish, as to the salt with which it is combined.† It may also be advantageously mixed with stable-dung alone.

On *meadow ground*, Mr. Hollinshead advises the farmer 'to sow six bushels of salt per acre, immediately after the hay is got in; which will not only assist vegetation, and cover the face of the ground with grass, but will induce the cattle to eat up the eddish.' For *pasture land*, he however recommends the application of foul salt at the rate of 16 bushels per acre; or, which he seems to prefer, to apply it in the same quantity, mixing with every 16 bushels of the salt 20 loads of earth, turning it two or three times to incorporate it, and laying it on in the autumn.

In *frosty weather*, it has excited the surprise of many persons that, when the land was quite white through heavy hoar-frost, ground which had been top-dressed with salt remained perfectly green, and apparently free from its effects. It is, indeed known to chemists to be an enemy to congelation; but we have, as yet, no practical knowledge of its effects, in that view, upon vegetation, nor are we aware that its application would tend to preserve crops from the consequences of frost.

The *quantity of pure salt* recommended to be applied to land as manure is from 4 to 16 bushels per acre, beyond which it has been generally found to become injurious to crops when sown with the seed; but, if laid in the autumn upon land intended for a clean summer fallow, from 30 to 40 bushels may be spread, according to the condition and nature of the soil. In the directions for its use given in the recent treatises of Mr. Cuthbert Johnson, from 5 to 20 bushels are assumed as the limits of its application to different crops; and although we think that, in most cases, the latter quantity would be found too large, and that, in all, the rules for its adoption savor somewhat too much of theory, yet as, with due discretion, in many instances they may serve as guides for its employment, we here transcribe them with very slight alteration: with this observation, that they only apply to the first year's manuring; though it has been stated by Mr. Hollinshead and others, that an annual application of a much less quantity will always keep the land in a state of the greatest fertility:—

For wheat and rye, 10 to 20 bushels per acre put on after the seed has been harrowed in; the earlier the better, but may be done until March.

For barley, oats, peas, and beans, 5 to 16 bushels per acre. For these crops it has however been found beneficial, in the west of England, to lay it on after the seed has been harrowed in; but in counties less humid, it would be more advantageous to spread it in January or February.

For turnips, and most green crops, 5 to 15 bushels per acre, put on about a month before seed-time; or in January or February, as the salt will then meet the insects in their weakest state. Mr. G. Sinclair, however, says—that, for the destruction of slugs, salt should be used in not less quantities than 10 or 15 bushels per acre, applied to the surface of the land.

For potatoes, 10 to 20 bushels per acre in January or February, if no other manure be used; but if a light dressing of dung be intended at the time of planting, then half the salt to be spread after the plants have been covered in.

For hops, 15 to 20 bushels per acre, in November or December.

For grass-land, 10 to 15 bushels per acre in the autumn, and, if possible, not later than November; but may be put on, without injury, until February. If applied to the extent of 40 to 50 bushels, the old turf will be completely destroyed, but has been generally succeeded by a new sward of sweeter herbage.

In Dacre's 'Testimonies,' which contain a voluminous mass of facts adduced in favor of the use of salt for agricultural purposes, it is said, that although the fertilizing qualities of salt, when used by itself as a manure, are very great, it yet requires discretion to guard against putting on too much, a few bushels to an acre are sufficient. If any large quantity be put on, it will by its pungency and strength destroy vegetation for a time; but afterwards, when the salt has been well dissolved in the soil, the land becomes very rich. That when mixed with dung and other manure, it is highly efficacious; but the safest way of using it is, to sprinkle it occasionally over the dung in the cattle-yards, that it may amalgamate with it, and ferment.

The effects, as ascertained by the result of its use upon the continent, are described by that eminent agriculturist, Von Thaër, to be nearly similar to those we have stated. When applied in large quantities, vegetation seems completely stopped; but when the salt has been washed in by the rain, and partly decomposed by the mould, it adds to its force during several following years. On rich land, when spread in small quantities, it produces very sensibly favorable effects, though of short duration; but if laid upon a poor soil, in an equal quantity, it has been found wholly ineffectual\*.

\* Principes Raisonnés d'Agriculture, 2nde éd., tome ii. p. 432.

\* Cheshire Report, p. 237.

† Sir H. Davy, Elem. of Agric. Chem., 4to., p. 295.

## LARGE HOGS.

From the Kentucky Farmer.

Mr. Silas Evans, of this county, sold to Mr. Harrison Thomson, of Clarke, a large lot of 75 hogs, intended for the southern market; the average weight of the whole lot being 375 lbs. the heaviest weighing 480 lbs. Taking the number into consideration, we think this is as fine a lot of hogs as any we remember to have heard of. They were of the old Kentucky stock, with a slight mixture of the improved breeds.

We have also heard of another lot of about 20 hogs, raised and fattened by Mr. James Rainey, near Colbyville, well crossed with the Berkshire stock, which averaged 426 lbs. They were from 13 months to 2 years old, generally about 15 months.

## KENTUCKY BLUE-GRASS, OR GREEN-SWARD.

To the Editor of the Farmers' Register.

Washington N. C. January 30th, 1841.

Dear Sir:—A few days since I had the pleasure of receiving Vol. viii. of Farmers' Register, from your hands, for which please to accept my thanks. Though I am no farmer, and have not a foot of soil to cultivate, I have ever felt a warm interest in the progress of an enlightened husbandry. I shall rejoice in the success of the cause which you advocate with so much ardor and ability, as well in the due appreciation and reward of your efforts. The Register does not come within my proper line of reading, but whenever I have met with a number, I have invariably found some article to interest and instruct me.

It was for some time a mystery why I had been honored with Vol. viii. I presume, however, that the solution was at length discovered in the words "see page 651," written on the cover of No. 1. If I have correctly taken the hint, I will reply, that you are heartily welcome to any aid I can give in removing the difficulty alluded to by Mr. Stevenson. It was but a few days before I received your present, that I had the pleasure of learning, through Mr. Stevenson's letter, what the famous *Kentucky blue-grass* is; and also of informing some inquirers in this place that it grows on their own lands. I have been long familiar with this grass, which, with its congener, *poa annua*, enters largely into the composition of the pastures of New England.

My attention has been forcibly drawn to this grass, in the low country of this state, where few if any really good grasses are found besides this, by its perpetual verdure. Wherever yards or lawns are turfed with it, they are verdant through the entire winter; thus indicating, as I supposed, its adaptation to this climate as a winter food. But what is more important still in this climate, it is the only grass of any value, that I have noticed, which endures the long continued heat of our warm season. It is only a long severe drought that parches it. So long as any moisture remains in the soil it continues verdant. I should judge, as this plant seems to affect shade, that it might be preserved through the severest drought in places where there are trees enough to check evaporation from the soil. Its endurance, in long continued heat, indicates its being more succulent

than grass which burn up quicker, (and consequently more nutritive?) Muhlenberg says of it, "optimum pabulum," but I suppose the farmers know better than the botanists about that matter.

The great confusion in the vulgar synonymes of the grasses is a serious inconvenience to the farmer, and it must certainly be a great desideratum to have it cleared up. All plants which are extensively used are subject to the same confusion. I have not been able, after long inquiry, to settle the synonymes of the oaks and pines in this state. Every neighborhood seems to have a peculiar nomenclature.

I would suggest, as the most likely method of attaining Mr. Stevenson's object, that all persons interested in the subject should send to you two or three specimens of each kind of grass, with all the common names written upon a label attached to each kind. The labels might be numbered, and notes be sent, referring to the numbers on the labels, communicating any valuable information that can be given upon the several species. If you can interest your correspondents in this plan, so as to secure their action upon it, you will in two or three seasons have the material in hand for the consummation so strongly urged by you, vol. viii. p. 651.

If you have no friend more convenient, or better qualified for completing the work, after the material is collected, you are at liberty to command

Your obedient friend and servant,

M. A. CURTIS.

P. S. If you should approve of the plan I have suggested, and be inclined to propose it to your readers, will inform me thereof. I will give you the mode of collecting, preserving, and transporting the grasses. It is very simple, and will cost no one any trouble.

We take the liberty of publishing the foregoing private letter, with its author's signature, though not so designed to be used, and which we would not have done, if the writer were not already well known to the scientific and reading public, as one among the first of American botanists. We shall be much gratified, and the cause of agriculture as much aided, by his fund of knowledge being drawn upon, to furnish light to this obscure subject. We will gladly receive specimens of grasses, prepared and secured, as directed above, to transmit to the Rev. M. A. Curtis; but it will be much better, if as convenient, that they shall be sent to him directly, (at Washington N. C.) as our ignorance of botany would forbid our forwarding the object in any other way than the very humble one of serving as the channel of conveyance for the specimens. But as it is desired to have the various provincial and incorrect names, as well as the botanical names and descriptions, of each grass, it will require for the formation of a list of synonymes, extensive enough to be very useful, the labors of botanists in different and re-

remote regions, and of sundry collectors of specimens. What each individual might do, would necessarily be imperfect—but the attention of several botanists and collectors, at remote points of observation, might furnish materials for one whole and complete and highly valuable list. This is the more desirable, as then the collection of specimens would be more complete, being made by, or under the direction of the botanists themselves. Besides Mr. Curtis, there are several other individuals who are among the readers of this journal, and valued contributors to its pages, who could essentially aid this object, not only from their knowledge of botany, but also because of the very different regions in which they reside, and the difference of the natural grasses, as well as of the various provincial synonymes of the same kinds.

—ED. F. R.

GRASSES—BOTANICAL AND VULGAR DESIGNATIONS AND SYNONYMES. THE WIRE GRASS OF VIRGINIA.

Westchester, Pa., Feb. 8, 1841.

J. S. Skinner, Esq.—Dear Sir—In the American Farmer of the 29th January, I observe an interesting notice of the "*Kentucky blue grass*," so called; and among other remarks, a desire is expressed, by the Editor of the Farmers' Register, that a more definite nomenclature might be furnished of the several grasses which are best known, and most important, to the agriculturist. It is no easy matter to collect all the local popular names of plants, and apply them accurately to the species intended. Nothing but a residence in the various districts of our country could enable any one to gather them all, and furnish a precise synonymy. Every neighborhood, almost, has its own names, for plants that are familiarly known; and unfortunately, many of them become transposed, or misapplied, so that the objects, meant to be designated, cannot always be ascertained without an examination of specimens. As, however, it is a favorite pursuit with me, I will endeavor, with your permission, to give a hasty sketch of the synonymy of those grasses which are most interesting to the agriculturists of the United States. A scientific description of them would be too voluminous for the present occasion; and moreover, such description may be found in any of the *Floras* already published. I will content myself with giving the botanical names, and annexing the most usual popular names; by which means the greater portion of the grasses known to our agriculturists, may be determined with accuracy.

Botanical names.

1. *Poa pratensis*, L.—This is the plant erroneously called "*blue grass*," in *Kentucky*. The English call it "*smooth stalked meadow grass*." In *Pennsylvania*, and most of the other states, it is known by the names of "*green grass*," "*spear grass*," and "*meadow grass*."
2. *Poa compressa*, L.—This is most generally called "*blue grass*," but is often called "*wire*

*grass*," and is probably the "*wire grass*" of *Virginia*. The English call it "*flat-stemmed meadow grass*."

3. *Phleum pratense*, L.—In *Pennsylvania*, and to the south and west, this is known by the name of "*timothy*"; but in *New York*, and throughout *New England*, it is called "*herd's grass*." The English call it "*cat's tail grass*."
  4. *Agrostis vulgaris*, L.—This is the "*herd's grass*" of *Pennsylvania*, and probably of the southern and western states, as far as it is known. It is also known in *Pennsylvania* by the name of "*red top*." It is called "*fine bent grass*," by the English; and a coarser species nearly allied to this, is the celebrated "*floria grass*" of *Ireland*.
  5. *Dactylis glomerata*, L.—commonly called "*orchard grass*," in the United States. It is the "*rough cock's foot grass*" of the English.
  6. *Festuca pratensis*, L.—This, though a valuable grass, seems not to have acquired a distinct popular name in our country. In *England* it is called "*meadow fescue grass*."
  7. *Lolium perenne*, L.—commonly called "*ray grass*" or "*rye grass*."
  8. *Avena elatior*, L.—Called "*tiller oat grass*" by the English; it has been partially cultivated in this country, under the name of "*grass of the Andes*."
  9. *Anthoxanthum odoratum*, L.—Called "*sweet-scented vernal grass*," by the English: remarkable for its fragrance, when cut and partly dry.
- The above-named grasses are more or less known, and esteemed, in the meadows and pastures of *Pennsylvania*; and it is remarkable that they are all believed to be introduced plants. Some of them are thoroughly naturalized; while others require to be sown, like cultivated grains, in order to insure a full crop. The following grasses, though of comparatively little value, may be enumerated for the sake of giving their popular names:—
- Botanical names.
10. *Tripsacum dactyloides*, L.—This has been somewhat noted, under the name of "*gama grass*," and "*sesame grass*"; but it never can compete with our better grasses, in good arable or pasture lands. It is too coarse and hard.
  11. *Triticum repens*, L.—Called "*couch grass*," and "*quitch grass*," by the English. A pernicious foreigner, which is difficult to subdue, when once fully naturalized.
  12. *Holcus lanatus*, L.—Called "*feather grass*," and "*white timothy*," a naturalized foreigner, of little value in our meadows.
  13. *Eleusine Indica*, Lam.—Known by the name of "*dog's tail grass*," and sometimes by those of "*wire grass*," and "*crab grass*." It is common in lanes and wood-yards; but is seldom seen in meadows or pastures, in *Pennsylvania*.
  14. *Digitaria sanguinalis*, Scop.—This is commonly called "*finger grass*," and "*crab grass*," or "*crop grass*." It is rather troublesome in our gardens and corn-fields; and is said to be particularly annoying to the southern planters.
  15. *Setaria glauca*, Beauv.—Known by the name of "*fox tail*"—a worthless grass, generally abundant in wheat stubble, after harvest.
  16. *Bromus secalinus*, L.—Commonly called "*cheat*," in *Pennsylvania*; and in the northern states, "*sheep*." A well known intruder in

wheat fields, and vulgarly supposed to be degenerate, or transmuted wheat.

The foregoing are the principal grasses which occur to me, as being familiarly known to our agriculturists, either on account of their value or as unwelcome intruders.

The remarks of Mr. Stevenson, respecting the *poa pratensis*, or "Kentucky blue grass," entirely coincide with my own observations and experience. It is decidedly the most valuable of the gramineous plants, in our pastures. It delights in rich calcareous and argillaceous soils; in which situations the numerous, linear, radical leaves, are often near two feet in length, and of the most luxuriant verdure. In poor, sandy, or slaty soils, however, it deteriorates so much, that it would scarcely be recognized as the same plant. I have never known it to be cultivated in Pennsylvania; nor do we find it necessary to sow the seed, where the soil is favorable. In such soils, it comes in, as the farmers term it—i. e. it supercedes the other grasses. As it is unnecessary to sow it in a rich soil, so would it be labor lost to sow it in a poor one. The only way, therefore, to have the benefit of this admirable grass, is first to prepare the land for its reception. If the soil be not naturally favorable—that is, if it does not consist of an adequate proportion of calcareous and aluminous earth, I should consider it a laborious undertaking to prepare it for a full crop of this grass; but whenever there is a good stiff loam, I have no doubt that a judicious application of lime and manure will facilitate, and speedily insure, the introduction of the plant.

My remarks have been extended so unexpectedly, that I must conclude abruptly—not, however, without the expression of my admiration of your efforts in the glorious cause of agriculture.

W. D.

The preceding article from the American Farmer of February 17th, which has been received since our last remarks on this subject were placed in the printer's hands, is from the pen of Dr. Wm. Darlington, of Pennsylvania, a distinguished botanist, and investigator of the botany of the region in which he resides, (of which he has written and published a 'Flora') and some of whose communications to other periodicals we have taken pleasure to copy into this. So far as it goes, the form and plan of this list of grasses, and their synonymes, are excellent; and it only requires to be amplified where it is deficient, and corrected where erroneous, as to vulgar names, (for in this the most learned must be sometimes misled by the most ignorant nomenclators,) and to be extended to other grasses and plants, either of important utility, or whose habits it is desirable to know, as indicating peculiar qualities or conditions of soil. The latter is a curious and interesting subject, which botanists have almost entirely overlooked. The prevalence of certain plants in some localities, and their entire absence in others not far distant, have been ascribed (and often most absurdly) to supposed differences of temperature, exposure,

elevation, &c., when in truth it was the difference of the chemical constitution of soil, though not perceptible by any other indications. Thus, sheep sorrel, and "hen's nest grass," or what we have termed "poverty grass," are unerring indications of excess of acidity in soil, and deficiency of calcareous matter, as the growth of saint join (in Europe) and of red clover, or of our "wire-grass," is of opposite qualities. Thus, if observed and marked, these and many other plants would offer the most unerring indications of the constitution and the wants, and the means of improving soils.

We take the liberty of suggesting to botanists, and to others who are disposed to aid this object, which we have several times urged, that the foregoing list of Dr. Darlington, as numbered, shall be taken as the commencement and ground-work of a general list of synonymes of the grasses and weeds of agriculture in the United States; and that other persons shall add to, or correct these and any subsequent descriptions, by reference to the botanical names and numbers here, or hereafter used—and that other grasses and weeds, as presented, be numbered in order, as a continuation of this list. It will not only be botanists and scientific men only who can aid this work essentially, but also those without any knowledge except such as ordinary careful observation would supply, added to acquaintance with the particular plant under consideration. It will also add much to the usefulness of such a list, if the peculiarities and character of each plant, as affecting agriculture injuriously or otherwise, should be stated. Even if such descriptions are to be found in any existing 'Flora' or other botanical work, they would not be there sought for by unlearned inquirers.

In furtherance of this proposal we will offer here a slight correction in regard to one name in Dr. Darlington's synonymes, the "wire-grass" of Virginia, which he supposes to be the same with the "wire-grass" of Pennsylvania, or "blue grass" of Pennsylvania and Virginia, (2. *poa compressa*,) but which is in fact his No. 11, *tritium repens*, or couch grass of England.

This grass prefers dry and light soils, and will scarcely grow except where there is enough of lime to constitute a good and fertile soil. Thus it is one of the most sure indications of a well constituted and improvable soil, whether made so by nature or by art. On the acid and naturally poor soils, best adapted to produce sorrel, poverty grass, broom sedge, and pines, wire-grass will rarely if ever be found, and never can be a troublesome weed, no matter how much putrescent manure is applied, and temporary fertility thereby induced. But if the land be made calcareous, by marling, or by the ashes deposited in the course of



time around old dwellings, this grass will be sure to appear, and take possession of the ground, unless great care be used to restrain its production. To eradicate it effectually, on its favorite soils, is almost impossible. It extends its growth not only by its seeds, like other grasses, but still more by its long running or jointed superficial roots, which stretch several feet from the parent stock, and striking in new roots from every joint, commence at each place a new growth. Every joint of these runners, when broken or moved by the plough or harrow, if covered by earth, becomes a growing set, and new source of supply. The vitality of the roots, even after being taken out of the earth, is remarkably enduring; and they have been known to live and grow, after exposure to dry air, or long immersion in water, which had been deemed certainly destructive. This grass was (and still is) the great pest of Weyanoke, the highly improved farm of the late Fielding Lewis, on James river. And while that admirable farmer and improver carefully saved every other material for manure produced by his land, he removed and threw away the enormous amount of wire-grass roots which he had every year to get out of his ground, lest he should increase the evil, if using them as a material for manure. The running roots abound in saccharine matter, and must contain much nourishing aliment for animals, as well as enriching manure for land. The proportion of roots is enormously large, (perhaps greater than all the growth of the grass above ground,) and therefore the loss of value as well as the amount of labor, in removing and destroying them is very great. There would be few discoveries more valuable to improving farmers, than to learn how to subdue this grass, as a weed, economically, and to utilize its undoubtedly valuable material, when necessary to be subdued.—ED. FARM. REG.

#### CULTURE OF INDIAN CORN.

To the Editor of the Farmers' Register.

*Essex, Feb. 20th, 1841.*

As the time of planting corn is near at hand, I will venture again to offer you a few more remarks on this most useful of all the grains at present known to us. And this I will do, even at the risk of being deemed by yourself and your readers, as quite hobbyhorseical on this subject. All, I believe, will agree that there is much yet to be learned in regard to it; and that corn-growers, especially, should ever be willing to encourage every inquiry, the object of which is to ascertain, as far as practicable, what are its distinctive qualities, and what its proper culture. Of this grain we have already a considerable number of varieties, and these are increasing every year. It becomes, therefore, more and more important to

determine which of them all is intrinsically best, (if any be so,) in all the three particulars which render one kind more valuable than another; to wit: greater productiveness per acre, greater weight per bushel, and superior nutritive properties per pound. None, I presume, will deny that the variety which is found to possess most of these three qualities, (if any does,) is justly entitled to be preferred to all others. So far, I believe, there is no difference of opinion among corn-growers. But when they come to decide between the various kinds, we find almost as many opinions as there are disputants. Opinions, too, which, unfortunately, are very often maintained—not with that calm, investigating temper, which is indispensable in the pursuit of truth—but with a degree of dogmatism, petulance, and obstinacy, that would be disgraceful even among squabbling children. Each of these wranglers has his favorite, whose claims to superiority he often urges with as much warmth and vehemence as he would use in a political party controversy; although he may not be able to state a single fair experiment that he has ever made to support his opinion. There is only one thing in which they can agree, and in which I think I can prove that they are perfectly right. This is, the belief that there is a great and radical difference between the varieties in all the qualities of productiveness, weight, and nutrition.

There are, however, some few corn-growers, I believe, who maintain, that there is no essential difference in the productiveness of the different varieties of corn: in other words, that if one kind is ever found to measure more than another, the difference is ascribable to soil and climate, rather than to any innate qualities in the varieties themselves. To support this opinion I have searched, but in vain, for the citation of even a single well conducted experiment; and am therefore compelled to attribute the maintenance thereof to that fondness for odd notions which some men seem to take a most unaccountable and singular pleasure in avowing. To these may truly be applied the old rhyming couplet,

"A man convinced against his will,  
Is of the same opinion still."

None, therefore, of the following remarks are designed for them; as it would be quite presumptuous in me to attempt what so many better farmers than I am, have failed to achieve. But believing, as I do, that a vast majority of us are both willing and anxious to learn from each other whatever may increase our knowledge of the various things connected with our profession, I will proceed, for their sake, to state my experience in regard to ten or twelve different varieties of corn, with which I have been busily engaged, for some years past, in making comparative experiments. All these kinds were in high repute in the parts of the country from which they were procured; and the result of my various trials warrants me, I think, in asserting that there is an innate difference between the lightest, and the heaviest, a difference little if at all affected by soil and climate, of at least, ten pounds per bushel, making fifty pounds per barrel! and an average difference in productiveness per acre of not less than fifteen per cent. This is not mere matter of opinion, but proved by actually weighing and measuring the varieties

compared together. The lightest kind is the pure gourd-seed; the heaviest is the white and yellow flint, which is cultivated chiefly in the northern and eastern states, where the large southern corn will not ripen before frost. The most productive variety has proved to be the twin-corn, after a trial of five years, during which it was fairly compared, each year, with two or three other popular kinds, until the whole number mentioned above had been subjected to comparison. On each occasion there was no guess-work, no striding off the ground, no conjecturing the contents of cart-loads; but the surveying tape, and the half-bushel were used in every case, and the number of corn-stalks accurately counted. I had no pet-corn among them, but was anxious only to ascertain the best, for profit's sake. As a proof of this I will here state, that I am still desirous to make a trial of every new variety I can hear of, and have the promise of two or three for the coming spring. My own experience in regard to the superior productiveness of the twin corn, which weighs as much as any of our large varieties, and is heavier than most of them, is confirmed by several gentlemen with whom I have corresponded on the subject; in Maryland, and several different parts of my own state. Moreover, I have the authority of two reputable millers for saying that it produces more meal from an equal measure, than any kind, out of several, with which they have yet compared it. The other advantages which I myself have ascertained that it possesses, are, that it may be planted about six inches closer each way; that it will ripen about ten days or a fortnight earlier than any of the large varieties usually cultivated in the tide-water part of Virginia; and having a much smaller cob in proportion to the grain, will measure more to the bulk. I can speak only conjecturally in regard to the respective quantities of nutrition contained in the different kinds of corn of which I have made trials, having no apparatus by which to analyze them. But if the nutritive properties in each variety depend on its weight, will the most productive per acre should be preferred for a crop, unless the excess of nutrition in the heavier kinds exceeds that in the lighter, considerably more than the productiveness of the latter surpasses that of the former; for we should take into the account the extra quantity of food for stock yielded by the most productive kinds.

But some still think it most profitable to cultivate the yellow varieties of corn, even admitting they produce less, because they command from 3 to 5 cents more per bushel, in the northern markets, than the white. Now, if either of the white kinds yields 15 per cent. more on an average, than the yellow, (and I have proved by several accurate trials, that the twin-corn does so in our climate, over all with which I have compared it,) then is it perfectly easy to demonstrate, that he who cultivates a crop of twin-corn will sell it for more at the usual prices of the white kinds, than he could get for a crop of yellow, made on the same land, even if sold at 5 cents a bushel more. Suppose, for instance, that an acre produces 20 bushels of yellow corn. This, at 55 cents per bushel, would bring \$11; at 65 cents \$13; and at 85 cents \$17. The same acre in twin corn would have produced 23 bushels, which at 60 cents would bring \$11.60;—at 60 cents \$13.80; and

at 80 cents \$18.40 cents; the superior profit, in each case, being greater in proportion as the price per bushel was higher.

Another great mistake about yellow corn is the common notion, that it is generally heavier than white. The weight, however, of any kind depends not upon its color, but its *flintiness*, of which quality some of our white varieties have as much as any of the yellow kinds that we cultivate, and consequently are full as heavy.

Should any of your readers suppose that I claim for Indian corn a higher rank among our various grains than it is justly entitled to hold, I will conclude this communication by referring them, first, to the opinion of the late Professor Cooper of South Carolina; and next to the recent census of Eastern Virginia. The professor asserts in his 'Emporium of Arts and Sciences,' (a very valuable work, now, I believe, out of print,) that "it contains more nutritive matter than any other grain." And then he proceeds to say, that "the greatest quantity of nutritive matter, under the least weight, can be put up in the form of bacon-fat, moderately salted, to be eaten with *Tossamanonny*," which is an Indian name for "Indian corn just ripe, parched to a light, chocolate or brown color, and ground to a powder." The whole article is highly instructive and interesting, especially as regards the economy of food, and its effects upon the health of both man and beast; but it is too long to copy.

My reference to our late census will show a vast difference in the quantities of the various grains which we cultivate, and thereby affords a still more conclusive proof of the superior value of Indian corn, when compared with any one, or the whole of them. Here is the item to which I refer. "No. of bushels of wheat 4,825,851;—of barley 5,449;—of oats 7,649,592;—of rye 382,433; of buck-wheat 26,785;—and of Indian corn 21,756,87d." Even this statement, as large as it may appear, falls short of the truth, for we are authorized to say, that "in several of the counties, answers were altogether refused to the questions relating to products."

I remain, dear sir, yours, very sincerely,

JAMES M. GARNETT.

N. B. From what I have said of the twin-corn, I shall hardly escape being suspected by those who never themselves do anything from disinterested motives, of seeking to *Thorbornize* them. But I hereby notify them that I have none to sell at any price. If, however, the perusal of this letter should excite a wish in any person to buy, I am almost sure they can procure what they want at reasonable rates, from any one of the following individuals,—Mr. J. Gouldin of Caroline, Mr. J. Derieux of Essex, Dr. Braxton of King-William, and Mr. Lewis Berkley's agent in the same county.

#### DAMP STABLES.

From the New Genesee Farmer.

A correspondent of the Farmers' Cabinet states that on taking possession of a newly purchased farm, his horses became poor, diseased, and incapable of labor; his cows became sickly, their milk di-

minished, their butter became bad, four lost their calves, two died of scours in spring, with other attendant evils. The dampness of the stable which was built under large trees in a low situation, and with a northern aspect. It was immediately torn down, and another erected on a drier situation, when, as was expected, all these evils vanished at once. Stables made of stone, are more liable to this difficulty.

EXPERIMENTS WITH AND OBSERVATIONS ON  
GREEN-SAND EARTH, AS MANURE, ON COG-  
GIN'S POINT FARM.

*By the Editor.*

At various times and in various parts of the Farmers' Register, I have offered my uncertain opinions on the interesting, and as yet obscure subject of the operation and effects of green-sand as manure; and have expressed my dissent, (as to the effects already produced, or possible to be produced, in lower Virginia,) to the received opinion that this manure, used alone, is either generally operative, desirable, or at all profitable on the far greater number of soils in this region. These opinions of mine, (singular I believe, and certainly not at all sustained by any concurrent views or declarations of geologists,) were put forth more at length than before in No. 11 of the last volume; but still only in general terms, as was proper in that case, my remarks there being but introductory to the very different practices of a particular region, remote from and very unlike to the scene of my own experience. I have sought for years to obtain the facts, and to have the experience, of practical men on this subject, so as either to confirm or disprove my own opinions. But these efforts to induce experiments, and to elicit the results of any observations already made, have been fruitless, except as to the few interesting facts stated of the practice of Dr. Corbin Braxton and Mr. Williams Carter, in the number just referred to. I am therefore induced to present, more particularly than before, the circumstances of such of my own experiments as were written in my private agricultural journals and memorandum books, together with the general results of more extensive practice; which general results, though not then recorded, are well remembered, and were too important to be either forgotten or mistaken, inasmuch as they concurred to disappoint the sanguine hopes before entertained of expected profit from this source.

Knowing that general statements of results are much less satisfactory than the precise facts, or the deductions from facts, whether mistaken or not, as written down at or near the times of occurrence, I will copy the memoranda as entered in my farm books, which were written merely for my own use, and were never expected to be brought before the public eye. These entries will probably seem unimportant and tedious to the reader; but it is hoped that their being presented will be excused, as furnishing the best testimony that I can now offer; and also the best check upon my present conclusions, when they vary from or oppose those made at a much earlier date. They will be copied without the slightest change of purport, either as to facts or deductions, even when a change of opinion has since occurred. Immaterial passages only will be omitted or abridged, and the worst of ver-

bal inaccuracies be somewhat corrected in form of expression.

But such as they are, these records of experience, and deductions therefrom, may be almost considered as testimony coming from a different source than the present writer, inasmuch as he formerly entertained opinions, and sanguinely hoped for effects, different from, and altogether surpassing, such as would now invite and direct his practice. And therefore, he was full as likely to be deceived formerly by his high hopes and too easy faith, as now in the opposite course, by opposite opinions.

In the early part of the first volume of this work, (beginning at page 207,) was given an account of my having discovered the extensive beds of this remarkable earth on my farm and elsewhere in Prince George county, as far back as 1817, with a minute description of its peculiar appearance, and the locality along the banks of James River; and also the general results of my practice with it as manure. Also, there (and afterwards in the same volume, upon more full information and examination of the "Jersey marl,") I pronounced that the earth I had discovered was, as a manure, identical with the celebrated "Jersey marl," which geologists call green-sand.\*

Now, although from the few facts then known, I had made this main and most important deduction correctly, (as has been since abundantly proved by the observations of geologists, and now universally admitted,) that *this earth is the same manure as that of New Jersey*, still I was misled, by my ignorance, in other respects. In the first place, I had then not even so much as ever heard of the term "green-sand," which has latterly become, through geological reports, as common as "house-hold words." In the next place, knowing nothing of "green-sand," and having found gypsum diffused in many parts of the bed, and little or no carbonate of lime, (generally, not even a trace of it,) I erroneously ascribed the fertilizing effects, when exhibited, solely to the presence of gypsum;—and my practice was directed accordingly, and the results were judged of upon that erroneous supposition. And under this mistake, I applied to the bed the term "gypseous earth," and supposed its value, as manure, to be in proportion to the gypsum contained. Nevertheless, and notwithstanding these errors of ignorance, the appearance of the bed was so described that it was *impossible for any one to mistake its true character who knew any thing of the green-sand earth in New Jersey or elsewhere*. For more full explanation on all these points, the reader is referred to my original article on this subject, written under these circumstances.

Eleven months after my extended publication above referred to, and eighteen years after my having discovered the bed, Professor William B. Rogers announced through the Farmers' Register (page 129, vol. 11,) his "Discovery of green-sand in the calcareous deposit of eastern Virginia,

\* I shall not, (unless required by any circumstances which may hereafter occur,) fatigue the reader by quoting the various passages above referred to. But if any one be curious on the subject, he may see, in the long general article referred to at page 207, and also in others at pages 272, 273, 775, vol. i. and 155 vol. ii, abundant grounds on which to decide upon any conflicting claims to the first discovery of, and publication describing this earth, in Virginia.

and the *probable existence of this substance in extensive beds near the western limits of our ordinary marl.*" No one, except the writer of that communication, could have been more gratified to see it, than I was; and no one then entertained more respect for the authority than myself. I was rejoiced to see scientific research at last directed to this very interesting and obscure subject, to which I, in vain, had so long attempted to call the attention of the learned. It announced truly a "*discovery*" of green-sand being found intermixed in greater or less proportion with many of the calcareous marls of the lower part of eastern Virginia; and besides that additional fact, I was indebted to that communication for my first knowledge of "green-sand" being an ingredient, and the important ingredient, of the "Jersey marl," and consequently of the extensive bed which I had before described under the name of "gypseous earth."

At the time of my discovery of this, the extensive body of "gypseous earth," or "green-sand" as it is now more properly designated, I entertained the almost universal opinion that gypsum (plaster of Paris,) was of no use or profit in the tide-water region. That opinion was correct as to nearly all the soils and circumstances of that region; but, as I afterwards ascertained, was erroneous as to the few cases of *clover sown on calcareous or neutral and naturally good and fertile soils.* But this description would not extend to one acre in one million; and on all others, gypsum was either wholly inoperative, or not enough effective to be profitable. Not then knowing the cause of the very few exceptions, as I afterwards learned, I deemed the discovery of impure gypsum on my land as of but little account, except as a matter of curiosity, and as an interesting scientific fact. Still, I made many small experiments with some of the larger crystals pulverized, thus forming pure gypsum, and of course the results were in no respect affected by the green-sand, which formed a large proportion of the general mass of earth. These small experiments, however, being made mostly on clover, and on good soils, showed effect more frequently than had been expected, and the results strongly encouraged me to use the earth largely which contained the gypsum in small and varying proportions, as it does the green-sand largely and universally. Still, let it be observed that, for years after, my experiments and practice were directed blindly, without any correct view of where gypsum would and where it would not act; and, moreover, that my object was to apply gypsum, and not green-sand, of which I still knew nothing. But whether known, or sought, or not, this ingredient was very far more abundant in every load of earth applied, than the gypsum; and therefore every trial of the "gypseous earth," or of gypsum in that earth, was also a trial of "green-sand." And though, when producing good effect, it might be considered doubtful to which of these substances to ascribe the benefit, or how to award to each its due share of the effects, still, when there was no effect, or when the early effect had ceased, it was not the less certain that the green-sand was then altogether inoperative. Thus, every experiment which produced no benefit, or but a transient benefit, was as full and fair a test of the power of green-sand, as if that substance had been applied without any gypsum.

Another preliminary remark should be made.

Having found benefit in many experiments, from applying a spoonful or two of pure gypsum to small spots, and that generally on clover and on good soils, I hastily and erroneously counted on such effects generally, and even in advance of my marling the acid soils on which I applied the green-sand or gypseous earth. Therefore, my false confidence and sanguine disposition made me expect benefit, and to construe all appearances in the manner most favorable to the operation of manure; and thus, as was natural, whenever I erred in opinion as to results, it was rather in favor of, than against the degree of effect produced.

Some of the earth used contained a large proportion of gypsum, (mostly finely divided,) perhaps from a tenth to a sixth of the whole mass. But, generally, the large applications were much poorer in gypsum—usually containing not a twentieth, and sometimes, perhaps, none at all. Of the green-sand I do not pretend to estimate the proportions, with any accuracy; but judging by the eye, I suppose that it must have constituted not less than from 20 to 30 per cent. of the mass. There is a much richer stratum below, containing (as Professor Rogers reported) 60 to 70 per cent. of green-sand, and of which I made one careful experiment only, and the last. But though the parts of the bed poorer than this in green-sand were generally used, (because containing gypsum in more abundance,) still, from the heavy quantities of the earth generally applied, there must have been usually plenty of green-sand laid on. These remarks the reader is requested to bear in mind; and to remember, also, through the following notes, that when "gypseous earth" or "gypsum" is mentioned as the manure, it is the *green-sand earth* which is always referred to, and containing a much larger proportion of green-sand than of gypsum.

I shall pass over all my experiments made with pulverized crystals, as they were with gypsum alone, and had no relation to green-sand, though, at the time, I considered the acting power to be the same. The following extracts from my old journals and memorandum books, for the Coggin's Point farm, will present every entry there made, and omitting nothing that bears upon the result, or conclusions thence to be drawn. For the convenience of after-reference and designation, the experiments and observations will be here numbered, though not so marked before. Any words now added to the quoted extracts, for explanation, will be enclosed [thus] in brackets.

I. "10th [January, 1818.] Three acres of new-ground were plastered at the rate of 7 or 8 bushels to the acre with gypseous earth, from the river bank near the meadow."

Oct. 1818. "No benefit derived."

This was poor acid soil, and not then marled. The land was part of that which was the subject of (subsequent) marling experiments, 1, 2, 3 and 4, stated at pp. 37 to 40 of 2d edition of 'Essay on Calcareous Manures.' This green-sand earth was far from being rich in gypsum. The crop (1818) was corn.

II. I remember that on another part of this ground, same year, this earth was applied, at planting the corn, a handful to each hill. Also, the remnant of the cart-load was scattered around very thick, broadcast—some of which was certainly as thick as 500 bushels to the acre. No ef-

fect was seen, on that crop, (corn,) or any subsequent crop.

III. 1818. "May 1st. Carted and sowed gypseous earth in small quantities, on various parts of my land. Most of the places are in clover."

"June 7th. Observed a remarkable effect produced by the gypsum [meaning the gypseous earth, or green-sand,] put on clover in Finnie's field, May 1st. Soil, a light calcareous loam, near the river bank."

As this is the only case mentioned of effect being seen this year, it may be presumed that it was the only case of effect, on the "various spots" tried. I remember nothing more of them than what is here stated.

IV. "1819. March 19th. Two acres of a point of Finnie's field marled at from 50 to 25 loads—one load of gypseous earth had been previously well mixed with every 30 of marl, except for the two middle rows. Six bushels of the same [gypseous earth] sowed on three-quarters of an acre without marl. Land in clover, and more infested with sorrel than any on the farm."

"Result. May 8. Decided benefit from the gypseous earth, the clover being 50 to 100 per cent. better; on that sowed by hand, [the clover] quite regular—that applied by mere mixture with marl is unequally distributed. The effect here is as striking on partridge pea as on the clover."

V. "May 10. Sowed gypseous earth on all that was not before plastered." October. "No effect."

This land, though so full of sorrel, was not naturally a very acid soil. It was light, dog-wood and hickory land, and at first very productive. After bringing one crop only, after being cleared, (because then surrounded by wood, and therefore the corn exposed to the ravages of vermin,) it was left out, and covered by a very thick growth of young pines, which were afterwards cut down, and left to rot on the ground; and which covering, no doubt, produced most of the sorrel. The product in corn was then about 20 bushels.

VI. "1819. March 12. Ploughed two acres of open part of the grove, (among large oaks,) and sowed clover seed.

"May 10. Clover came up very thick, and stands well. Sowed on it 9 bushels of gypseous earth. Good rain the following night."

"Afterwards [the clover] destroyed by grazing. Some little remained until 1828, and never showed any effect of gypsum."

This soil was a moderately stiff clay loam, and rather poor.

VII. "1819. May 10. Sowed 9 bushels of gypseous earth on the clover not before plastered on the point of Finnie's, on which experiment [marked here IV] was made. Two small spots left out. A heavy rain the night after.

"Sept. 2. No effect this year." "Nor on the corn in 1820, or the wheat in 1821."

VIII. "1825. Two rows of cotton (House field,) had a small handful of gypseous earth thrown on each parcel of seeds, before covering. Rows passed through rich calcareous high-land, (site of the old negro-houses,) newly marled land, and low-ground. No perceptible effect."

IX. "1819. Jany. One ox-cart load of gypseous earth was strewed on about half an acre of the Point field just before ploughing: (about four bushels of pure gypsum per acre:) soil calcareous,

dark loam, rich enough to produce four to five barrels per acre; had been grazed, but was still covered with a good growth of vegetable matter.

"Result. June 2d. The plastered corn is from 50 to 100 per cent. better than the adjoining, and the spot easy to distinguish at the distance of 200 yards.

"Oct. 15th. The difference gradually became less until the corn was ripe, when there was still an apparent difference of 25 or 30 per cent. A square of the plastered corn, 16 by 17 corn-hills, and the same quantity adjoining of unplastered, were to-day gathered and carefully measured: the latter produced three bushels of shelled corn, and (to my astonishment) the former only one peck more, or about 8 per cent. The growth of the corn was by the plaster made much more rapid, the plants much more luxuriant, and the size of the stalk and shuck is now evidently much increased; and yet there is scarcely any increase in the grain. Seasonable weather until Aug. 1, then severe drought. Aug. 27, heavy rain, which, of course, was beneficial according to the backwardness of corn."

X. "1819. On poor, light, acid land, marled previously at the rate of 800 bushels of poor marl (25-100) to the acre, 4 acres were sowed with gypseous earth at the rate of 20 bushels, and one acre at 10 bushels. On another part of same field, of somewhat better land, and which was not then marled, a quarter acre was covered at the rate of 40 bushels of gypseous earth to the acre. Planted in corn, 1820."

The marl had great effect. "The gypseous earth had not the slightest effect, [nor was any certain on any after crops of corn or wheat. No clover sown. In 1824, the corn on this part of the field was the best; but the marks had been lost, and no outlines could be traced; and therefore the better growth might or might not have been caused by the gypseous earth.] Season very favorable; enough rain, and never too much."

XI. "1820. Feby. Eight bushels of gypseous earth strewed on a quarter acre of very light, free land; had borne only two crops since being cleared. In corn. No effect. Nor on the wheat, following—nor on the little clover that stood."

XI. "1820. Feb. 24 bushels strewed on new-ground [3d. Div. of South Field] soil, cold poor whitish clay. In corn. No effect." Nor on the wheat succeeding. No clover sown here on the wheat.

The field in which both the last were, was well marled in 1823, fallowed, and in wheat in 1824. In 1825, I was surprised to see a fine growth of clover, 18 inches high, from the remains of seed sown in 1818, and which produced scarcely any visible growth before. No effect of the gypseous earth could be seen on this fine growth of clover. But on another part of same field of cold clay soil, where some of the gypseous earth had been spread two years before, a great effect was evident on the clover. This had been marled also in 1823.

At the close of the year 1819, notwithstanding the predominance of failures, I still had hopes of gypsum (i. e. the gypseous or green-sand earth) being profitable on my land. In some remarks at page 37 of my Farm Journal for 1840, I expressed the intention of following wheat by clover generally, "if I find gypsum and clover to equal my expectations." No other gypsum had then

been used by me, except in very small experiments made with pulverized crystals obtained from the same beds of earth. I had not then learned, as I did afterwards, that the cases of successful operation were almost entirely confined to clover, and that on calcareous soils. I used the gypseous earth largely for two or three years, in a way that I could not judge of its separate effect, and since, I have been satisfied that it thus had no effect. This was, mixed with the general mass of farm-yard and stable manure. From no application of this kind did I see afterwards any effect, even though on calcareous or marled land, (as my farm-yard manure was always then applied,) neither on the corn and wheat, nor the clover, when clover was sown afterwards. The use gradually ceased, until renewed in 1827. The recommencement of notes thereon was in 1828, in my experiment book for that year. After referring to the entries, quoted above, for previous effects, these introductory remarks to later experiments follow thus:

"The general want of success, together with the belief of that I have very little of this manure, [meaning such as contained gypsum,] made me deter using it until I had clover growing to apply it to; and that crop I have found it impossible to raise (at least to any profit,) before the land is marled. In 1825, the results of old experiments [numbered XII.] encouraged me again to try clover; and finding a better supply of gypseous earth [that is, showing gypsum present] in 1827, made me also proceed to its more free use. I shall begin again to write down my recent experiments, at the time, or soon after their being made. I shall also in some cases state results of old applications, where the facts are such as it is impossible to mistake."

Next follow experiments stated minutely, and too much at length to be quoted here fully, and therefore extracts will be made, and the general and important circumstances only will be mentioned.

XIII. In 1827, 195 heaped bushels of greensand, or gypseous earth, (of a new body, of limited extent,) supposed to consist of one-sixth of pure gypsum, was mixed with the farm-yard manure, and with that laid over 14 acres of light loam, marled in 1819 and 1823. No effect on the corn, or wheat, or clover, that could be ascribed to the green-sand—or other than the manure and marl were supposed to have produced. The failure of "this and all similar applications [this having been done largely for several winters] induce the belief that there is some chemical product of fermenting farm-yard manure that entirely destroys (or decomposes) gypsum—and which has prevented my receiving any benefit from any mixture of gypseous earth with manure, which is the mode I pursued with it generally until lately. If the process of fermentation produces *oxalic acid*, such a decomposition of the gypsum would take place."

XIV. 1827. February 21st, 145 bushels of the same earth strewed by hand over 8 acres of a naturally rich black loam, neutral soil, and parts slightly calcareous. In cotton. In June a manifest benefit. I was absent from July to October, but my overseer reported that there had been considerable effect visible on the growth. When I returned, not much difference could be seen, as

the leaves had dropped, and all the open cotton pods had just been picked over.

XV. 1827. March—80 bushels of same earth spread by hand on 5 acres of cotton land. No effect that year, or the next, when again in cotton. This was land not long cleared, formerly a poor acid soil, a pine and whortleberry ridge, but well marled. (Same soil as subject of experiment I.)

XVI. and XVII. Two other experiments, same year, on clover on another part of the same field, and similar soil, but of land long cultivated—24 bushels to the acre, in different spots, where yellow marl had been used, and 6 bushels on blue marl, applied in 1822. "The benefit on the first was generally, but not throughout perceptible; on the last it was very evident."

The next note records the most remarkable effect I ever saw from this (or any other) manure—and which experiment also furnished subsequently the strongest proof, by the short duration, of the fleeting nature of the effects.

XXIII. "1827. March 22d. About 20 bushels of gypseous earth laid on wheat and young clover. Soil, dark rich loam, part originally shelly, and the balance lately marled from a thin muscle shell bed, dug near the spot. This quantity was ordered to be sown on an acre; but was, by careless spreading, put on much less land.

"Result. Adjoining the loads [where the earth had been left thickest,] very great improvement on the clover seen during harvest, June, 1827. None on the wheat.

"1828. February 28th. Some of the same, as well as more of the adjoining land, (from not knowing the position of the former sowing,) was sowed again at the rate of 20 bushels to the acre.

"Result. April 3d, 1828. The first application is now evident enough, and the effect greater than any thing ever before seen. The thickest manuring has done no harm.

"1829. June. The great effect continues, and the same, in a less degree, is found on the adjoining land, marled last year—making, on a piece of between one and two acres, the heaviest growth of clover I ever saw. It was mowed last year for hay, and grazed in the fall, and has mostly been mowed again last month for green feeding. The adjoining clover not gyped, and on like land, is so thin and low as not to be worth mowing."

In reference to the same experiment, the following remark is made in my Farm Journal (vol. 3.) "The greater the quantity of the earth applied, here and elsewhere, on like soil, the greater the effect—and on the naturally shelly land here, it is better than on the artificial."

When mowing this clover for hay, May 31st, 1828, the following remark occurs in the farm journal: "It was all lodged, and the mowing was very wasteful, as well as troublesome; yet it still is so succulent and tender, and seems so late, compared to the other clover, that the appearance would indicate that it was mowed too early."

XIX. "1827. Five bushels of gypseous earth put to a quarter acre of corn, in the hills at time of planting. Hilly gravelly land, long cultivated and much reduced. Had been marled in 1823. No benefit."

XX. 1827. In the field for corn, and on several different soils, not originally calcareous, but marled, 20 bushels of gypseous earth used in different experiments. No effect produced.

**XXI.** "1827. Five bushels of gypseous earth sowed broadcast on 40 yards square of Pewter Level new-ground, which had before been marled at the rate of 700 bushels [of blue marl] to the acre. Soil, whitish clay, very close and intractable, and very poor. In corn, and again in 1828, and wheat in 1829. Not the least effect of the gypseous earth on either." This land is of the remarkable soil, described in chap. x. of 'Essay on Calcareous Manures,' and which I believed to contain sulphuric acid before being marled. Of all the trials of gypseous earth made on different parts of this kind of land, whether before marling or after marling, not the slightest effect was produced on any crop; yet, after marling, and without gypsum or green-sand, the next succeeding crop of clover was wonderfully luxuriant, though the land was still poor; and no subsequent crop of clover has ever equalled the first (after marling,) even when the land had been made much richer. If sulphuric acid (or sulphate of iron) be present, as I suppose, in this miserable natural soil, then it will account for the first state of sterility, and also the great growth of clover after marling, and the non-effect of gypsum then as before. For the sulphuric acid is taken up by the lime, and the union forms gypsum, and in such great quantity, that no additional quantity can do any good. This however does not account for the inefficacy of the green-sand; unless in this respect, as it seems to me in all others, the action and effects of the green-sand and gypsum are precisely alike.

**XXII.** 'The Farm Journal for 1829 refers to the several experiments stated here as made in 1828, and adds—"generally there was not the slightest benefit found during last year from any application [of green-sand earth] made in the spring of 1829; though some of them show remarkable difference this year." [From the use of the word "some" it may be inferred that the greater number of applications were altogether inoperative, even the second year.] "No benefit has been found from the gypsum [green-sand earth] put on the new land of Court-House field, which was ridge pine and whortleberry acid land, [the subject of first 4 experiments stated in 'Essay on Calcareous Manures' and I. and XV., here] whether on corn, wheat, or clover, (for that rotation,) though tried very thick as well as thin, and after, as well as before marling. However, there were some spots of remarkably rank volunteer clover, last year, where clover had been sown and gyped without benefit, 4 to 6 years before." On this land, green-sand earth, containing a considerable proportion of gypsum, was afterwards put on clover, at the rate of 20 bushels to the acre. The effect was very unequal; but a part of it made as heavy a growth of clover as I ever saw.

To show the high expectations entertained of the improvement by means of gypseous earth, or green sand, induced by the remarkable effects in some cases on clover, I will copy an entry from my Journal made June 12th. 1828. After stating that 42 acres of good clover had been mowed, it is added—"This crop of clover, the like of which has never before been made on high-land in the tide-water district, is highly gratifying, and goes far to console me for the evils which the

operating cause, marling, has produced on my grain crops [by excessively heavy dressings.] It opens a valuable prospect of improvement from my plaster beds, which have only lately been used to any extent, and which I deemed almost useless, (for my soils) for years after I had discovered the existence and value of this manure, in this neighborhood. Most of my mowing was where gypseous marl had been used, from 4 to 8 years ago; and but little other clover on marl from other pits, was worth mowing. This season, however, has been remarkably favorable to the growth of clover."

This reference to gypseous marl, and its peculiar value to clover, requires an explanation which will serve to throw additional light on the subject of green-sand. What I called gypseous marl here, and also in the 'Essay,' is the only *eocone* marl on my farm, and is the overlying stratum of the bed of green-sand, and which was, undoubtedly, from every appearance, originally the same calcareous marl. This kind of marl contains, besides its calcareous ingredient, a small proportion of gypsum, and also some green-sand. This is the bed lying under the extremity of the promontory of Coggins Point, and which has been used by Collier Minge, Hill Carter, and some other farmers across the river. The peculiar benefit produced to clover, in every case, by this kind of marl, was to me one of the strongest proofs of the value of gypsum, when accompanied by marl—and the value which I thus ascribed to gypsum perhaps as much belonged to the contained green-sand, of the presence of which I then knew nothing.

**XXIII.** "Gypseous earth and clover on marl-burnt land. 1828, Feby. 28th. about 6 or 7 acres of Finnie's field, which (after resting and not being grazed for 2 years) had been ploughed well in December last, mostly 7 inches deep, now sown in oats, got in by twice well harrowing, and clover seed sown, 3 quarts to the acre. Before the harrowing, gypseous earth spread, 20 heaped bushels to the acre; 20 feet width of the whole length left without the gypsum. This piece of land includes part of the marling first cultivated on in 1820, which in 1824 caused great injury to the crop by its excess. [Subject of experiment 10 in 'Essay on Calcareous Manures,'] but principally is of the part marled as heavily in 1824, and which therefore might be expected to show as much injury this year, if cultivated in corn. "Soil sandy and part gravelly, and very poor before being marled, which had greatly improved the first crops.

"Result. The oats were bad, owing probably to the bad preparation. The clover was too thin—and not the least effect seen from the gypsum."

"1829. A great change by May 1st; and by June, the effect of the gypsum was evident wherever applied; and a most striking inferiority in the strip of 20 feet width. Upon the sites of the former heaps, where careless spreading had left the gypseous earth much thicker, the clover is much the best; and in this manner the position of most of the heaps (which were a heaped bushel each) may be known. The crop of clover was too thin to be worth mowing scarcely, and, if otherwise, it would have been left to improve the ground which so much needs it. But some of the best spots of clover, produced as I thought by the heavier dressings, were so rank as to lodge,



and proved the possibility of excellent clover being made on the whole piece, and perhaps the whole [both poor and marl-born] field.

XXIV. "1828. March. Twenty-two bushels of gypseous earth sown on a dark neutral loam, which had formerly been marled with gypseous marl. On clover, sown spring of 1827. No certain benefit."

At another time, on this same field, and of similar soil, very great effect was produced on clover, by an application of gypseous earth.

Various other applications of this green-sand earth were made, and some of large extent, which were not recorded, and not accurately remembered, and which therefore will not be more particularly mentioned. No journal or notes of experiments were regularly kept later than 1828. But I cannot fail to remember correctly the causes of my final loss of confidence in this manure. The most remarkable effects stated of several of the experiments, as well as the slighter benefits elsewhere obtained, (and all of which would seem, at this time, if new, such convincing proofs of the great value of green-sand as manure,) all disappeared in a few years, and rarely could be distinguished on the clover of the next succeeding rotation. Considering, as I still did, that the effects were produced by the gypsum present, it seemed that these transient and uncertain effects would be more cheaply obtained by sowing the gypsum of commerce. This was then tried to the amount of 10 tons or more. But though gypsum seemed to act and to fail as the green-sand earth would have done, it is certain that the effects of the latter were greater than gypsum sown in the usual quantity of a bushel to the acre, or even thrice that quantity.

But though the green-sand and gypsum combined, and in large quantities compared to the gypsum of commerce, produced greater effect, yet, in every thing, except the degree of effect, the native and the purchased manure seemed to act precisely alike. My use of purchased gypsum alone has not been considerable, and the results have not been very carefully noted. But so far as may be judged from such imperfect means of comparison, I infer, from the foregoing experiments, and all the more extensive practice of which the results are not recorded, that the manner in which green-sand acts, whatever may be the cause, is similar to that of gypsum. And putting aside all such judging by comparison with gypsum. I may venture to affirm positively the effects of green-sand manure, on such soils as mine, or in this tide-water region, to be as was stated at page 682 of vol. viii. viz.:

"That, like gypsum, if used in small or moderate quantities, green-sand is only operative (or at least profitable) on neutral and calcareous soils; and rarely, even on these soils, on any crop except clover, and other plants of that family.

"That green-sand is not operative at all on acid or naturally poor soils, unless in unusual and excessive quantities; and then, or in any mode of application, that the manure is, like gypsum, but of temporary effect.

"And that, on acid soils, where it is least operative, after the land being marled (or otherwise made calcareous) the green-sand, like gypsum, generally becomes operative on clover."

And, in addition, that no matter how great the effect produced by green-sand, it will not be per-

manent, like marl, but temporary; and be at an end in the course of a few years.

These are the proofs I have to offer of my positions. I admit that they are too few, and have been limited to too narrow a locality, to settle the question. Let others who have experimented elsewhere in Virginia, present their results; and the comparison of all will serve to ascertain and establish the true and important facts, and withdraw the subject of green-sand from the region of baseless hypothesis, and fanciful speculation and unsupported assertion, to that of fact and truth, established by experiment.

It may be objected to all the foregoing experiments, as well as to all my more extensive practice, that in no known case was the green-sand used alone, or without the accompaniment of gypsum, the latter being the only substance then valued and sought.

This would be a fatal objection, if my experiments were brought forward to prove the effects of green-sand to be either general, or considerable, or durable, to even to the very limited extent which I admit them to be. For part or even all the effects which are shown above, might be attributed to the gypsum present, leaving none for the green-sand.

But it is no objection to the positions which I maintain. For, however little of the effects produced may be ascribed to the gypsum present, the remainder, or even the whole effects, will not show the green-sand to be more operative than I allow. It happens however that I know of one experiment made of green-sand without any admixture of gypsum, and which will now be stated. It was made with great care, and with information of the constituent parts, and with a view to the action of the green-sand alone; and several years after I had abandoned the application of this earth, as impracticable.

XXV. In 1835, when Professor Rogers was on a visit at my house, made, at my request, to examine these beds of green-sand, in addition to showing him all that I had before seen, or was visible at the surface, I had dug, for his better examination, a pit on the beach of Coggin's Point, of 7 or 8 feet deep, in what he supposed to be one of the richest parts of my bed of green-sand. A specimen of this earth contained (as he reported) from 60 to 70 per cent. of pure green-sand. In all the earth dug out, there was no gypsum perceptible, or suspected to exist; and there were a few remaining, and scattered shells, but not enough to furnish any appreciable value as manure. The earth, which this pit furnished, was carried out, and spread, at the rate of 40 bushels to the acre, on young clover, on sandy soil formerly acid and poor, but marled 8 or 10 years before, and thereby much improved. The remainder of the piece was sowed with purchased gypsum at the rate of a bushel to the acre, except a broad strip between the green-sand and the gypsum, left without any. The gypsum produced a very decided benefit, and the green-sand, at first, had still more effect. I kept no note of this experiment, and perhaps may not remember the degree of effect produced. I know however that it did not at all compare with the best effects which I had before obtained from gypseous earth on naturally good and calcareous soils; and further, after one course of crops, and the return of clover four years



after on the same field, I could not trace the position of either the green-sand or the gypsum, by any perceptible superiority of product.

If other farmers in Virginia, besides Mr. William Carter and Dr. Braxton, who have stated theirs, possess facts in regard to the use of green-sand alone, I trust they will make them known. And, what is still more desirable and important, for the elucidation of this subject, (which has been obscured rather than enlightened by all that scientific investigators have done for it,) it is requested of all farmers, who have it in their power, to try such accurate experiments as will fully test the truth of the opposite opinions held in regard to this manure. And if indeed I am mistaken as to its value, and the much higher geological estimate is more correct, I shall be rejoiced, not only for the general agricultural interest and benefit, but still more for my own private and individual interest and profit, which will be greatly advanced by establishing so great a value in this earth, which forms the inexhaustible sub-stratum of my own, and all the neighboring lands along James river. My personal interest is so deeply concerned in the establishment of the truth of the opinion opposed to that which I have long maintained, that I can scarcely be suspected of being unwilling to be convinced of being in error.

#### LIMING IN FAIRFAX COUNTY.

To the Editor of the Farmers' Register.

I told you in my last, that I had lost my crop of wheat from rust; I am now convinced that the many and heavy rains, co-operating with the lime I had given the earth, at the time of seeding the crop, was the cause of failure. This, however, did not deter me from moving on in the same line, and laying down the growing crop in perfect confidence of success, with this difference, that in place of the harrow for seeding, I used a two-horse plough, and turned in the seed and lime a good depth; it now looks well.

I am thought a sort of mad fellow as regards lime; but I am free to confess that after leaving the mountains and its spurs, (except alluvial land,) I would not take as a gift, 500 acres, if it be located where calcareous matter could not be had. We are told that blood is the life of animals; so I believe lime is the life of such grain and grass as the farmer desires. Most farmers seed less than half the grass seed that their true interest requires. Why is this? I am not surprised to hear that man will cheat his fellow man, and after it even go to prayers; but why should he cheat himself? I shall seed not less than two gallons of clover seed per acre, and pretty well of timothy besides, on strong wet land, knowing that with grass as with animals, the strong will prevail over the weak, where the struggle is for food. A good crop of clover every third year turned into the earth, with occasional dressings of lime and annual dressings of plaster, will soon give us land as good as any of the west, except their alluvials. I take it as granted by all farmers, that wet land should not be cultivated, and that his manure should be applied where it will bring him the greatest return. I was going to say something about cattle, sheep and hogs, but I shall pass those, with this

remark, that I find it better to feed my land than any stock, except so many as are necessary for my comfort and that of my servants. **LIME.**

#### DIRECTIONS FOR KILLING THE CHRYSALIDES AND PRESERVING THE COCOONS OF SILK-WORMS.

To the Editor of the Farmers' Register.

As the valuable productions of the silk-worm may be rendered nearly worthless, after the ingenious insect has completed its work, I have supposed I might be useful to some of your readers, by furnishing for publication, some remarks, relative to the curing of cocoons, and their subsequent protection from the depredations of mice.

1. *Of curing cocoons.*—This work embraces, not only killing the chrysalides, but also the proper drying of the cocoons, to preserve them from injury when stored away. Whatever plan may be adopted for killing the chrysalides, its application must not be delayed too long. If the chrysalis is allowed to become a butterfly, (which occurs from 12 to 20 hours before it emerges from the cocoon,) it will be found impracticable to kill them with any ordinary degree of heat; and if that should be effected, it will avail us nothing, because the cocoon is rendered nearly worthless for reeling, as soon as the metamorphosis from the chrysalis to the butterfly takes place.

"The juices of the silk worm seem to assume an acid quality, when that insect changes from the larva to the chrysalis state. At the moment of its escape from the latter to the butterfly form, it emits a reddish liquor, which reddens blue paper, and which was first attentively observed by M. Chausseier, of the Dijon Academy. He obtained the acid by infusing silk-worm chrysalides in alcohol, which dissolves their acid without being charged with any of the gummy parts of the insect; and, by evaporating the alcohol, the acid remains tolerably pure."—See *Lavoisier's Elements of Chemistry*, page 340.

The change, as before noticed, from the chrysalis to the butterfly form, occurs from 12 to 20 hours before the insect emerges from the cocoon; and at that time a portion of this reddish or brown acid is discharged, which penetrates the pellicle or inner skin of the cocoon, and at different points comes in contact with the external layers of silk fibres—rots it, and renders the cocoon of little value for reeling. Some have deemed this liquor to be an acid; but that it has the effect of rotting the fibres will not be questioned by persons having much practical knowledge of reeling.

The following plan for killing the chrysalides, I have practiced successfully for four years: About seven days after a considerable number of the worms begin to spin, all the tardy worms are removed, and furnished with accommodations in another place; and three days thereafter the cocoons are gathered, spread in layers of a single cocoon, on frames that will be presently described, and exposed to the rays of the sun by placing them on the ground. When the ground is dry, and the thermometer rises to 80 in the shade, I have never failed to kill them effectually in six hours. Last summer they were killed in two hours. If the ground is damp, it will require two

or three days. *Let it be remembered, that the frames must be placed on the ground.* A scaffold elevated two or three feet from the ground will not do. The frame is made of rough laths, three feet long and two wide, and a sheet of strong brown paper is pasted on it. A piece of lath is nailed across the middle of the frame to keep the paper from sinking. These frames will be found convenient for exposing the cocoons to the rays of the sun and also for spreading them for three successive weeks. *The cocoons must not be thrown into bulk earlier than three weeks after the chrysalides have been killed.*

2. *Mice.*—After the cocoons have been cured, (by which I mean killing the chrysalides, and airing for three weeks,) they may be placed in bags made of cotton cloth, to contain about two bushels each, and suspended by a strong twine to nails fastened in the joists. Mice will rarely if ever touch them in this situation. Some persons, as soon as the chrysalides are killed, pack their cocoons in boxes and barrels, and put them in the garret; and when they are subsequently examined, it is found that mice have taken up their abode among them, and destroyed all that had not been previously spoiled by fermentation.

LAYTON Y. ATKINS.

Stafford County, Va., Feb., 1841.

From the Mass. Agricultural Journal of 1824.

#### GRASSES.

By Hon. John Welles.

In the Agricultural Journal of January last, I offered some observations on grasses, and gave the result of an experiment showing their loss by exiccation or the process of drying, in the summer of 1822. This subject has been pursued during the past season, and still farther extended. The variation, in the comparison of the two years is not, it is apprehended, greater, (except in one or two instances which will be explained) than will often occur from the nature of the soil, difference of season, closeness of vegetation, exposure to the sun, &c. &c. As far as a general principle may be established by experiment, it will, in some degree, go to fix the relative value of our natural grasses, as they prevail in our pastures, or of those artificial grasses which should be selected as fit objects of cultivation. In collecting these several species, I have found the natural grasses which generally prevail in this neighborhood, so few in number, that a short and yet sufficient description of them could be most properly first given with advantage.

The earliest grass we have is the *Avena spicata* (Linn.) or spiked oat grass. It is peculiarly indigenous to the United States, and grows, it is said, as far south as Georgia. This grass ripens so early that it mostly sheds its seed and thus reproduces itself, and is widely propagated. For this reason, as well as from its short growth, it is undeserving of culture, yielding little to the scythe. But it is of great value for early feed in our natural pastures, in which it abounds. One hundred pounds cut on the 16th July last, gave fifty pounds of hay.

The next grass which we shall mention is the

*Poa pratensis*, (Linn.) with us falsely called red-top, a color it never has. This, both in Europe and America, is the common and prevailing grass of the pastures. It grows in almost every soil and situation, and is one of those materials which, as that excellent botanist, Mr. Nuttall, of Cambridge, informs me, is used in Europe for the manufacture of bonnets. The color of its top, or panicle, is of a yellowish brown. The number of florets in the spike varies from three to five. The seed is sometimes saved and sown; but these fine spired grasses have so minute a seed, that, either from exposure to dampness and fermentation, or some other causes, which it is difficult to prevent or discover, they too often fall of vegetating, by which great injury and disappointment occurs in the wished for crop. Though this grass is amongst those which lose the least in drying, yet, as it presents little to the scythe, it cannot be recommended for culture. It is excellent in our pastures, and comes in naturally as the artificial grasses go out of our mowing lots. Indeed it has a preference with our farmers generally, for horned cattle, over every other grass. One hundred pounds cut July 17, gave forty-six pounds. It was past flowering.

The notice of our prevailing natural grasses might here be closed, but as the grasses which we shall next describe appear in our pastures, as well as our cultivated grass land, and are mentioned by several writers in answer to the question proposed by the society, as to "what natural grasses prevail in this part of the country," we shall give their description here.

The grass here called Rhode Island, is the *agrostis alba*, (Linnæus) the marsh bent grass of England, or the *agrostis stolonifera*, Schrader, German. Mr. Nuttall, to whom I exhibited a sample, pronounces it the famous florin grass of Dr. Richardson and the Irish agriculturists, on the authority of Hooker, who describes "the panicle thereof as purple, and the branchlets patent." The color, at first, of the branchlets is of a deep red, and they adhere closely to the spike, but as they flower they become patent and change to a lighter purple. This grass has six to eight branchlets, and flowers more fully than the *Poa pratensis* though often confounded therewith. It is amongst those which lose least by evaporation, and would be a more favorable object of cultivation, were it not liable to the same uncertainty as to its vegetating and producing a crop as the preceding grass, and from probably a like cause. In Ireland it is said to suit a wet soil, and to produce over six tons to the acre. In this country it does not flourish in such soil, nor does it give a great crop, especially compared with the herds grass. Still the hay is very excellent, and perhaps not exceeded by any other for its intrinsic value in nutriment. One hundred pounds in early flower, cut July 17th, gave forty pounds.

The grass, in the answer given to the society called Cambridge, dog and garden grass, is the *triticum repens*. Dr. Elliot calls it the "hurtful blue or Dutch grass." In England it is called couch, knot, or dog grass. Every joint of its root produces a new plant, and it is said to be there, as it is found here, one of the worst weeds and most difficult to extirpate. It resembles wheat, of which it is a species. The best mode to destroy it is to keep the lands longer under the plough,

with a frequent use of the hoe, as where this is not done, two years ploughing only not merely multiplies, but occasions it to engross the whole soil. It has a hard woody fibre and is disliked by cattle. It flourishes mostly near cow yards, and gardens, and is called Cambridge, from its abounding on the salt banks of the Charles river. One hundred pounds cut July 22d, in late flower, gave forty-eight pounds.

The grasses above described are those which prevail in our uplands, and are indigenous here. They are probably, most of them what Dr. Elliot, in his *Field Husbandry*, denominates English spear grass, and speaks of as natural to the soil and more hardy. The term English has been applied to our upland hay, ever since the settlement of the country. These, with the red and white clover, and the varieties which nature, in a course of culture, or otherwise, produces, are what give verdure and fertility to the face of the earth.

Of the cultivated grasses, the first in importance is the herds or timothy grass, *phleum pratense* (Linnaeus.) Dr. Elliot says "it is a native, and early discovered in this country by a man of the name of Heard, in Piscataqua." It is doubtless admirably suited to our soil and climate, and not only flourishes in uplands, but may be sowed to advantage in low grounds, especially when drained or raised with gravel or loam. It often attains in height five feet, and has been known to produce over four tons to the acre. It does not yield much till the second and third years. For which reason it is sown with clover, which being biennial and of shorter duration, gives it space to succeed. In this vicinity, such is the preference given to it, that it sells at about one fourth more than any other hay. It lasts, with one or two top-dressings, six to seven years. The answers to the inquiries of the society as to the quantity of seed sown, are two to six quarts. There should not be less seed than half a bushel to an acre, which later experience establishes most decidedly. One hundred pounds cut July 11th, gave thirty-nine.

Red clover (*trifolium pratense*) is a most valuable grass: when cut green, it affords an excellent nourishment for cattle in the soiling process, as well as for swine. When made into hay, cattle are exceedingly fond of it. The flower and leaves are apt to separate from the stem, for which reason great care should be taken that it is not made brittle by too much exposure to the sun. It is best cured, as far as may be, in cock, and should be carted after the dew begins to fall. When properly dried, salt is used advantageously, as it may be housed with safety, more green than any other hay. This prevents fermentation and heating, and it is kept in better order. Many in this vicinity not only salt their clover, but all other hay. Lord Somerville observes that he "uses half a bushel of salt to a ton, and its benefit surpasses all belief, producing the best possible effect in color, flavor, and general result;" with damaged hay, he says "it is a great restorative."

The benefit of salt in the culture of the soil being now so generally acknowledged, and the use of it so necessary for cattle in the interior or remote from the sea coast, it is difficult to assign a reason why its use is not more prevalent. To land highly manured, two to four pounds of seed in this neighborhood is used. But in the interior some apply eight pounds, and many more. One

hundred pounds cut July 6th, gave twenty-five pounds.

The white clover (*trifolium repens*) is an abiding grass, sending out roots from every joint, and forming a close mat on the ground, and is very excellent for pastures. But it is found to afford so little to the scythe as to discourage the culture thereof. One hundred pounds cut June 26th, gave twenty-seven pounds.

Of the grasses which grow in our meadows two only have been tried. The fowl meadow, which Dr. Elliot supposed to have been brought to Dedham by birds, is said to be the *Poa nemoralis*, or marsh meadow grass of England.

It is an excellent grass and deserving of culture. It is believed, however, to have extended itself more by its shedding its seed early than by any artificial means. One hundred pounds cut July 23, give fifty-three pounds.

The common grasses of our wet meadows it is believed, are various kinds of *carex*. This, in all its varieties, is a poor grass, and where the land can be ditched and made to produce a better growth, the means should be taken. It is a bad economy to flood lands with mere water for a long time, to increase a nearly worthless burthen. The effect is to destroy all sweet nutritive tender plants. One hundred pounds cut 23d July, gave forty-four pounds.

The "marine fox-tail grass," which is the prevailing grass of our salt marshes, we receive from nature without knowing how to aid in its increase. One hundred pounds, cut July 18th, gave sixty pounds.

The black grass (*juncus bulbosus*) grows principally where the water is freshened by streams from the uplands. It is the most valuable salt grass we have, and but little inferior to upland grass, we know no means of artificial increase. One hundred pounds, cut July 18th, gave thirty-eight pounds.

We have too far trespassed on the time of the readers to do more than allude to some of those grasses which have been introduced and proved unsuitable for our culture.

The wild oat grass (*Avena elatior*) with the rye, ray or darnel grass with which it is said to be confounded, are often seen in our pastures and meadows, but animals seldom touch them. They have a strong woody fibre and afford little nutriment, though well spoken of south of us as well as in Europe.

The burnet scarcely shows itself for a year and then disappears.

The succory has been praised by Mr. Arthur Young, that distinguished agriculturist, who sent it to Gen. Washington. It has been introduced here, is disliked by cattle, and has become one of the most troublesome intruders in our fields. These, with the St. Foin and lucerne and many others, have passed away and seem to have ceased with us to excite expectation. Of the orchard grass or cocks-foot (*dactylis glomerata*) the trials I have witnessed do not enable me to speak so decisively as one of the trustees, Mr. Prince does who approves of it. It may be considered as in a course of experiment.

My desire, sir, in the preceding, has been to aid in exciting an attention to the best means of culture for our grass lands. The process of sowing grass seeds was far from universal within the

recollection of many in this country, and is lamentably insufficient now. Its neglect has been complained of even in Europe. It has been contended that nature would furnish according to her own capacity the power of increase in this particular. Thus the soil was to be furnished with the means of promoting vegetation by labor and art. But here there were to stop, and the stimulating principles were to evaporate and be wasted, and one or two good crops lost in waiting for this slow process.

But the blindness of this doctrine is vanishing before the light and improvement of the present age. We learn from experience that the earth presents to industry and skill her ceaseless efforts, and never pauses but from our neglect.

Subjoined is a table showing the loss of weight in drying grasses. The white clover of 1822, was taken in the shade. That of 1823, from a light warm soil exposed to the sun. The red clover in 1823, was taken in the first year of its product, in close growth, and for that reason falls short of 1822. The salt grass of 1822, was, I have reason to suppose, a second growth, which accounts for the difference of the two years.

	1822	1823
100 lbs. of green white clover gave—	17½	27
“ “ red clover	27½	25
“ “ herds grass	40	39
“ “ fresh meadow	30	44
“ “ salt grass	39	60
“ “ 2d crop or English Rowan	18½	19
“ “ corn stalks	25	25
“ “ spiked oat grass gave		50
“ “ red top		46
“ “ Rhode Island		40
“ “ couch grass		48
“ “ marine black grass		38

#### MONTHLY COMMERCIAL REPORT.

For the Farmers' Register.

The resumption of specie payments, as noticed last month, was of very short duration. The runs on the United States Bank of Pennsylvania are stated to have reached to about six million dollars, and on the other banks of Philadelphia to about an equal sum, when they were obliged to succumb on the 4th inst. The banks of Delaware and Maryland readily followed the example. Those of Richmond declined to do so, as did some of their branches, but in this respect there is no unity of action. It would be impracticable, of course, for banks to pay specie, whenever demanded, for checks based on deposits of the notes of other banks, or on collections made in other places; and those banks which profess to pay specie, confine such payments to their own issues. They must do this, or refuse deposits of current money, which would be a greater inconvenience to the community than suspension is. This course is pursued by all specie paying banks.\* A differ-

\* Being opposed generally to the opinions of our much respected commercial correspondent in regard to banks, it is perhaps enough for us to enter a general disclaimer, without objecting to any particular passage. Otherwise we should positively oppose the above description of "specie paying banks," as in-

ent one is impracticable, and it is unreasonable to require it.

This failure of the United States Bank, (for failure it is called,) which has caused this renewed suspension, and the consequent derangement of money matters, have increased the pressure which previously existed, and which now extends to New York. The depression of some stocks is enormous, for example, Indiana 6 per cent., 60! Illinois 6 per cent., 54!! United States Bank stocks, \$23!!! Vicksburg Bank stock \$5½!!!! Many other state and bank stocks are greatly depressed, and those of rail roads, and other joint stock companies generally are in a similar condition. Thus the great mass of what were considered secure investments, is unavailable and unproductive, and many persons are deprived of the income on which they relied for support.

In the prices of produce in Virginia, there has been little change during the month. Tobacco, \$1 to \$8. Cotton, 8½cts. to 10½cts. Flour, \$4½ to \$4¾. Corn, 42cts. to 45cts. The recent accounts from Europe (to 4th inst.) are rather favorable for cotton and tobacco, but not for flour and grain.

The warlike aspect which Europe presented a few months ago, has become pacific, except that the means are retained, without any threat of being used. Even the Celestial Empire is said to have lowered its tone towards Great Britain, finding herself worsted in the conflict. An effort has been made to raise a belligerent tone here, but it found no response. Without any preparation for the encounter, it was worse than idle to raise the shout, and even with preparation, it were folly to act precipitately, before resorting to a pacific course.

Exchanges in New York are thus quoted.

On Boston par.		
Philadelphia, 4½ dis.	Mobile, 9 dis.	
Baltimore, 4 "	N. Orleans, 6½ "	
Virginia, 4 "	Missouri, 9 "	
N. Carolina, 4½ "	Tennessee, 14 "	
Charleston, 3 "	Kentucky, 8½ "	
Savannah, 5 "	Ohio, 8½ "	
Augusta, 9 "	Mississippi, worthless.	
London 8 per cent. premium.		

Feb. 26th.

X.

#### SHELL MARL FOUND IN A NEW REGION OF MARYLAND.

To the Editor of the Farmers' Register.

Somerset, Md., Feb. 3d, 1841.

I am pleased to be able to say, that a deposit of fossil shells has been discovered, within a few weeks, in Somerset county, Md., on the farm of Theodore G. Dasheill, esq. I have seen and examined a specimen of this shell marl, and although I did not analyze it, from its appearance it is fine marl. I have seen much of the shell marl

applicable—but which is quite applicable to all the banks of Virginia and other states, (at least south of New York,) which now profess to pay specie, but do not, and probably never will pay it again, to such extent as to deserve the name of "specie-paying," or their paper being called truly convertible into specie.

[Ed. F. R.]

† Since, United States Bank stock has fallen to \$18½.

[Ed. F. R.]

of Talbot county, Md., and recognize that so recently discovered in Somerset to be the same material. I have been informed that the bed of marl on Mr. Dashiell's land is about two feet below the surface, and that it is believed to be extensive. This fact is important to be made known to the public. As Professor Ducatel, the state geologist, has intimated a belief that if such deposits exist in Dorchester, Somerset and Worcester counties, they lie too deep for practical purposes. I have no doubt there is much of the fossil shell deposit within our county. I have used lime quite freely on my land, and am satisfied with the results, and, perhaps, some day I may give you a few pages from my memorandum book.

This first discovery of shell marl in this locality is, indeed, important, and we trust its value will be fully availed of. The promised communications, and any others, from our correspondent, will be very acceptable.—ED.

#### CORN SHELLER.

From the Maine Farmer.

We examined a very simple machine the other day for shelling corn, invented and patented by a Mr. Dinsmore of Vermont.

A piece of plank, say a foot long and eight or

ten inches wide, is made a little concave on one side. This is filled with nails without heads projecting about a quarter of an inch: at one end a handle projects to take hold of, and at the other is a hole through which a bolt goes loosely which pins it to another plank of similar size, but made convex, so as to fit the concavity of the other, and also filled with nails as the first one; this fastened firmly to a rude frame and the whole set over a tub or basket.

When you wish to shell an ear, you raise the moveable side, put it in, and then bring it (the moveable side) down, pressing the ear gently. One movement downward is enough to shell the ear. In this way a boy-power can be much more effectually and economically employed in shelling corn than in any other way for the same amount of expense of apparatus. Mr. Wm. A. Herick of Greene has the patent right for Kennebec county. Any farmer can make one, and every farmer should have one, provided he raises any corn to sell.

#### BONE MANURE IN ENGLAND.

From the Farmers' Gazette.

In 1823, bones to the amount of £14,395 were imported; in 1837, they had increased to £254,600.

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# THE FARMERS' REGISTER.

VOL. IX.

MARCH 31, 1841.

No. 3.

EDMUND RUFFIN, EDITOR AND PROPRIETOR.

## HUSSEY'S REAPER.

For the Farmers' Register.

I see, by your last number, you decline recommending Hussey's reaper, for the good and sufficient reasons, that you had not seen it work, and those who have tried it differ in opinion. Letters recommendatory in our country, both of men and things, are often too easily obtained, and I approve your caution.

A few of Mr. Hussey's first invention have been in use in this, and the adjoining county of Talbot, for two years, and I understand those who used, approve them. When I went into his shop last year to get one, I was offered his first and second invention; I preferred the latter, on account of the machinery being less complicated, and I was in some degree influenced by learning that a gentleman of your state, whose intelligence I estimated by his writings in the Register, had preferred it.

I have not, as yet, from my own experience, been able to decide on the value of the reaper, though I must confess my expectations are much in favor. It broke early in harvest, and I did not get it well repaired till towards the close. I then, for parts of two days, cut some strong wheat, afterwards my oat crop, and also my clover for seed, much to my satisfaction. Mr. Hussey's reaper may still be considered in experiment. An efficient wheat cutter is a great desideratum in agriculture; and, perhaps, the best means of improvement will be found in exposing its imperfections. The defects which I ascertained were, the part on which the lever plays (which I call the perch) could not sustain the impulse of the lever, being made of cast iron, and the knives could not be set to cut higher than nine inches, which cut more straw than was useful, and also grass among the wheat; this imposed unnecessary labor on the horses, and a heavy strain on the machine. The first defect I corrected, by substituting a perch of wrought iron. Mr. Hussey was here towards the close of harvest, and I pointed out to him the second defect; at his request, I sent the reaper to Baltimore last fall; he has returned it within a few days, and it may now be set to cut high or low.

An implement, which promises an important improvement in agriculture, is a matter of as much interest to farmers, as a measure of national policy to politicians, and ought to be freely discussed, and will generally be sooner decided. I observe, from some late movements in congress, that a national bank and a protective tariff, are still considered open questions, though they have been under discussion for forty years. RUSTICUS.

Queen Ann's Co., Md., 18th Feb., 1841.

## POUDRETTE AS A MANURE.

From the New England Farmer

The following practical farmer's analysis, or the results of experiments made with poudrette, as compared with other manures, and by itself,

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may be of interest to some of your readers; and will tend to show the high value of the article—and especially of that prepared by Anthony Dey, esq., of New York, which he has represented as being a much better article than that referred to below; of the correctness of those representations, however, I imagine other proof than his assertions or analysis will be required by those who know us both, at home. Of their correctness or incorrectness, however, I am willing to let those judge who use the articles.

A gentleman in Westchester County, New York, planted a piece of corn last season, on which he put only half a gill to the hill; of which he gives me the following account. I use his own language, which is as follows:

"For corn, I think no other manure can come in competition with it. I planted, last season, on sward land turned over (being first manured with common yard dung,) the ground rolled very flat, and harrowed, no plough used afterwards, the rows being marked by an ox chain drawn on the ground, the corn dropped, and half a gill of poudrette immediately put on the corn, and lightly covered with the hoe. This was done from 25th to 28th of May, as the weather allowed. More than a fortnight after my neighbors had planted, I was told by many who saw the manner and time of planting, that I should have no crop, but in three weeks, my corn was farther advanced than any near me; and it continued of the finest color, and was the best field of any I saw through the season. It was cut up and removed from the field on the first of September, and when husked, turned out the least soft corn that I ever had, in proportion to the good corn. I can attribute this quick and good growth to nothing but the poudrette; as the land was not well tilled, the corn only having had one good hoeing after it came up; the cultivator was run through it twice."

Thus it will be seen that it may be used in very small quantities, and yet produce very satisfactory results.

Another gentleman, on Long Island, says that he used a gill to the hill of corn, and he had as good corn from it as where he used a shovelful of good yard manure in the hill; and that the worms were much less troublesome where the former, than where the latter was used; and others have made the same remark in relation to insects.

On wheat it has been applied experimentally in different quantities. Twenty, thirty, forty, and even seventy bushels have been applied to the acre. A gentleman on Long Island says:

"I used it also on wheat, at the rate of 40, 60, and 70 bushels to the acre. That on which I put forty bushels to the acre, produced as good wheat as where I put forty wagon loads of stable and barn yard manure—and equally as good as where sixty or seventy bushels of poudrette were used. I also used it on all kinds of garden vegetables, and never had better success. I consider it better for corn in the hill than bone."

Another gentleman who has used it three years, says, under date of "Smithtown, L. I., Aug. 9th, 1840:"

"My wheat came in well where I used poudrette last fall. It stood the winter well, and the berry is fine; but where I used bone, about the same cost to the acre, in the same field, it was winter killed, very much shrunk, and I should judge that there would not be over half the number of bushels per acre. Where I used poudrette this spring, the result is very favorable. I used it on corn by the side of the best yard manure; thus far, it is decidedly the best; and I have no reason to doubt but that it will continue so through the season. I also used it in my garden, and it never looked better."

Another gentleman, also residing on Long Island, one of the earliest experimenters with poudrette in this country says:

"I have used poudrette for three years, on nearly all the varieties of crops usually cultivated on farms in this country, and am entirely satisfied with its results. I consider its introduction singularly fortunate to the farming interests in this vicinity."

I will refer to but one other gentleman at this time. He is also a resident of Long Island, one of the earliest, now one of the largest shareholders of the company. He received last year over fifteen hundred bushels on account of dividend. He says:

"Another year's experience in the use of poudrette, has, if possible, increased my confidence in its great utility. My opinion of its high value on most crops was expressed in a former communication, and has been fully confirmed. The past season, I applied it principally on oats and wheat. It may be sufficient to say, the result was entirely satisfactory. Indeed, the convenience and advantages resulting from the use of this article are so great, that one accustomed to possess them would hardly think himself able to carry on farming without it."

I could increase these statements if it were necessary, but I will leave the subject with the simple remark, that the practical farmer or purchaser will find more safety in relying upon the character of those who prepare it, than upon an *analysis* got up by one party for effect. As I have before said, I court investigation, and am willing to abide the result of experiment.

By a reference to the advertisement in your paper, those who desire to make an experiment will learn how it may be obtained.

I am, sir, respectfully yours,

D. K. MINOR.

We shall insert on the cover the advertisement referred to above; and this, as well as this article, will be published, not for any pay or profit, direct or indirect, to us, (however usage may have caused such benefit to be deemed legitimate,) but for the information and benefit of the agricultural public. Mr. Minor was formerly the proprietor and publisher of the *New York Farmer*; and was the first person in this country to commence and carry on the business of preparing *poudrette*; by which excellent service will be rendered both to the improvement of agriculture, and to the cleanliness and healthiness of towns. We have long urged, (by different means, the mixture with calcarious

earth,) the utilizing, in all towns, of this great source of fertility, if used as such, or of filthiness and disease, if neglected, as is almost universal; and we consider as a public benefactor, and one of high rank, the man who has first shown the practical value of the product, and shall establish, and cause to be extended, the business of preserving from waste, and putting to the best use, the materials of poudrette.—ED. F. R.

From the Farmers' Cabinet.

#### POUDRETTE.

Sir,—I am desirous of knowing if any of your readers, in this part of the country, have used the manure denominated poudrette, in a way to be able to speak decidedly as to its relative merits, and the best mode of application.

In an advertisement put forth by the "New York Poudrette Company," which has fallen into my hands, the account is, of course, flattering; but it would be more satisfactory if some of our friends *on this side the water* could join their testimony, resulting from actual experience. That the article is powerful in its efficacy, it is but reasonable to conclude, but from observations that have fallen from some who profess to have used it, one would be led to conjecture that its effects would not be very lasting, on the principle, perhaps, that what is violent is seldom permanent; nor would it appear certain, that the opinion, as to its suitableness for autumnal use, is as flattering as for spring dressing: to be sure, the introduction of the article to notice, is but of recent date, and it might require a longer time, to enable one to form a just opinion of its relative value; yet, in the hands of a disinterested practical man, the matter might soon be decided. I take leave to use the term *disinterested*, seeing that the testimony in its favor, contained in the bill of advertisement, comes from persons whose names appear on the list of stockholders of the company. But I have no desire whatever to detract from its merits, far otherwise, for if it can be shown that the poudrette is only equal, in value, to the manure usually purchased, the difference in the cartage will be quite sufficient, in the judgment of every practical man, to decide all questions in its favor. No one but a practical man could calculate the labor, and particularly, the *value of the time* expended in carrying two hundred loads of manure per annum, a distance of three miles, to the farm! it is monstrous even to think of; but he will soon *calculate* the difference between carrying twenty loads of manure, and thirty bushels of poudrette, which are accounted equal in fertilizing properties, and this will be decisive with him.

The use of this article has long been known in England by the name of "desiccated night soil," and large quantities have been sent to the West Indies for manuring their cane lands, for which it is understood to be very suitable; while in the fields around London, immense deposits are found in preparation in all its different stages. I have, however, an idea that its use is more approved as a dressing for grass, or artificial green crops, than for grain, for which it is considered too strong, being apt to engender the rust. How far the pu-

rifying process of forming it into poudrette has sweetened its influence, is a question which I should be glad to see decided. On every part of the continent of Europe, *night soil* is highly valuable for its fertilizing powers; but as the inhabitants are not such a beef-eating community as we are, it is of importance that every opportunity for accumulating manure should be embraced. But in China, we are told, it reaches its intrinsic value, being there considered like "old gold," and hence, perhaps, it is, that "night men," in England, are named "gold finders." I remember once working a mine of this sort, which, having mixed with earth and exposed abroad until it was purified, I used as a top dressing for wheat, in the spring: the effect was astonishingly great, the straw and ears being twice as large as those in any other part of the field; but it was completely destroyed by the rust, while the remainder of the crop was free from blight of every description, and proved a fine sample. And I was reminded of this experiment when reading the note at page 179 of the Cabinet for January, where it is said that much of the injury which is placed to the account of canker, mildew, &c., will, on investigation, prove to originate in the unwholesome supply of *impurity* of food: and this, I have no doubt, is the fact.

In the hope of receiving, through the pages of the Cabinet the information which I am seeking on this important subject,

I am, respectfully,

JACOB SMITH.

Bucks County.

We always like the appearance of the caution, and even distrust, which are exhibited in the above article, and very willingly give it a place next to the one preceding it, conveying different views. There is not the least ground left to doubt the great richness and value as manure of human excrements; and if the manure prepared from it is not as valuable, it can only be because the mode of preparation is so defective as to cause much of the rich principles to be wasted in the process of desiccation.—ED. F. R.

#### MAKE THE WIND WORK—HO!

From the Farmers' Cabinet.

I have lately been gratified to learn that a friend of mine has applied a *windmill* to his barn pump, for the purpose of raising water for his stock. It is said to cost only a moderate sum, and to work well—so well that it is likely to come speedily into general use. The plan which he has adopted is said to be essentially the same as was proposed in the Farmers' Cabinet, vol. 2, p. 162.

This means of working a pump seems particularly well adapted to the purpose of watering stock, and is equally applicable to the barn yard and the pasture-field, whether the water is derived from a well or neighboring stream. The wind, however, is objectionable as a *pumper*, unless closely watched. Some times he wont work at all—sometimes he will work too fast. At one time he will lie still, in spite of all our promptings—at an-

other time he will work furiously for a whole night, when we would wish him to sleep. He has so many *eccentricities*, that it is absolutely necessary to employ some management, and contrivance, before we can fairly depend upon his services. By the proper use of these *restrictions*, he may become a valuable farm laborer.

1. If he will pump too much water, so as to drain the well improperly, a *ball-cock* and return pipe may be fixed, so as to return the surplus water into the well.

2. If he will work all night, the pump may be thrown out of gear, so as to stop it.

3. If he will sometimes run too fast, a *regulator* may be so contrived as to equalize the motion. This may be done in several ways.

a By means of friction-lock. This may be so fixed that the friction will increase with the strength of the wind.

b The wings may turn on pivots, and rest on springs, so as to yield to the increasing force of a gale, and thus lessen the surfaces exposed to the wind.

c The obliquity of the wings may be changed by the centrifugal force of weights, and counteracting spring. Or,

d The wings may be made to slide on the arms. This may be effected by means of weights sliding on the backs of the arms, and connected by cords with the opposite wings; the weights must be such, and so adjusted by springs, that as the velocity increases, the centrifugal force will carry them outwards, and draw their respective wings nearer the centre. I would be glad if some competent person would give us a complete description and drawings of a wind pump on the best plan, its dimensions and mode of construction, so as to enable us to have them erected.

AQUA FONTANA.

Chester County.

#### GLANDERS AND FARCY.

From the (London) Sporting Magazine, for January, 1841.

The liability of grooms and all persons going about glandered horses to be infected with those diseases; and prophylactic measures to be had recourse to against their baneful influence.

The subject of glanders must always be one of lively interest to the hunting and racing sportsman: indeed, when we consider the direful consequences resulting from that disease when it once breaks out in a valuable stud, we know of no other topic which has a stronger claim upon our attention.

A very few years have elapsed since the allied diseases, glanders and farcy, were considered as belonging exclusively to the horse, the ass, and the mule. The results of scientific inquiry have overthrown that opinion, and have proved that these affections are not confined to the quadruped, but that the human subject is as liable to be affected as either of the animals above-named. It has, moreover, been fully ascertained, that glanders and farcy can be transmitted from man to the horse by *inoculation*, and *vice versa*. These are practical truths of much importance to the sportsman, truths which cannot be too well or too



extensively known, as we have lately seen amply proved and illustrated at the "Ecole Veterinaire" of Alfort, near Paris. Presuming that some information on these subjects would prove useful as well as interesting to the readers of "The Sporting Magazine," we propose in the following articles to lay before them a succinct view of facts and experiments relating to the disease both in man and in the horse, and, by interlarding the subject with some incidental matter, we hope to divest it of the dryness of detail—in a word, to blend together, as far as lies in our power, the *utile et dulce*.

M. Waldinger, veterinary surgeon at Vienna, was the first to direct attention to the liability of man to be affected with glanders. He states "that the greatest precaution is necessary in going about glandered horses, or those that died from glanders or farcy, as the severest injury and even death often arise from inoculation."

M. Lorin published some observations shortly after on the same subject, in which he mentions that a groom had his fingers affected with inflammation in consequence of operating on a farcied horse: tumors precisely similar to those observed in the horse were soon developed in this man's limbs; they were cut out, and he was ultimately cured by filling the wounds with small pieces of lint or cotton steeped in turpentine.

Sidon, another veterinary surgeon, published a paper about the same time, in which he stated that glanders was transmissible from the horse to man, causing the worst kind of ulcers; and mentions an instance where a horse took the disease from a farrier who had a glandered sore on his hand, which came in contact with the animal while he was giving it a ball—both died of the disease.

We might multiply instances of a similar bearing from foreign sources, but these will suffice.

We shall now briefly narrate facts which came under our own immediate observation.

A groom named Prost slept in a stable at Paris occupied by a glandered horse. Some days after the death of the animal, Prost was attacked with the same disease, which was characterized by pustular and gangrenous sores over the body, in the nose and throat, below the ears, on the glans, and on the feet. He died on the 12 h of last February. On the evening of Prost's death, a small quantity of matter was collected on watch glasses from the gangrenous sores beneath the ear, on the fore-arm, and from the back and shoulder. A soundered mare was immediately inoculated by a veterinary surgeon with the different portions of matter.

First, at the right nostril he inoculated the matter by three punctures, of which two were within the nostril and one external: the two first punctures gave rise to a weeping of blood; but the other produced scarcely any. Second, on the white part or conjuction of the right eye he applied a small quantity of the matter. Third, at the internal and upper part of the right buttock he inoculated the matter by three punctures. Fourth, at the internal part of the right armpit he also inserted the matter by three punctures. The left side of the animal was inoculated in a similar manner.

MM. Leblanc, Dupuy, Vigla, and Desir, gentlemen belonging to the Veterinary College, were

present at the inoculation of the horse. A diary of the different results was kept.

On the 13th and 14th no appreciable change could be observed in the state of the parts inoculated. On the evening of the 15th, at 7 o'clock, slight circular and circumscribed redness and swelling were observable round the punctures on the right buttock; at the centre of the swelling a depression was seen corresponding to each puncture: there was a painful swelling in the region of the left buttock where the punctures had been made. The circumference of the wings of the left nostril were a little tumefied; there oozed a small quantity of pale colored fluid from the internal wing; there was also effused a small quantity of serum from the internal wing of the right nostril; but the circumference of the punctures was not so swollen. The pulse was natural, forty-eight pulsations in a minute.

On the 16th, at seven in the morning, no change was observed. In the evening the symptoms of inoculation were beginning to be marked.

17th.—At eight in the morning the tumefaction of the punctures was increased; the tumors are more hot, harder, and more painful. On the side of the upper lip, near the angle of the mouth, two elevated bands were observed about an inch in thickness, elongated, irregular, and slightly painful. The left eyelids are greatly swollen, and the conjuction red. The air expired by the animal has a disagreeable odor, and the nostrils are smeared with fluid. The pulse still natural; the animal eats well.

18th.—At seven in the morning: the nodulated tumors of the right buttock are united by a band of lesser ones, very hot and very painful: there flows from the nostrils a fluid more colored and more abundant than was yet observed. Now mark the rapid advance of the disease.

19th.—The circumference of the punctures in the nostrils appears more tumefied, especially on the left side; the respiration is more difficult; all the tumefied parts are very painful; the animal eats very little, and that little with difficulty.

20th, morning.—Exasperation of all the symptoms; the band on the upper lip is greatly increased, and very painful; all the tumors are circumscribed, and terminate abruptly, precisely like those peculiar to farcy; the animal with much difficulty is enabled to open her mouth to take food.

21st.—The symptoms of injection were still more marked, and the local pain greatly increased. The disease still proceeded steadily in its course for some days; and on the twenty-first day from the period of inoculation, the unfortunate animal was killed, after having presented all the characteristics of glanders and farcy. After death the diseased portions of the horse were excised, and on careful examination were found to be exactly the same as those commonly found in glandered animals.

Several useful inferences may be drawn from the foregoing detail. In the first place, it proves beyond a doubt that it was glanders the man died of, as a horse otherwise healthy was impregnated with that disease by the inoculation of matter taken from Prost after death. Every one knows that the horse usually takes the disease, without being inoculated, by contagion, as it is called; but until the foregoing inquiry was instituted, it was

believed that the human subject could not take glanders without inoculation. The reader will bear in mind that the man Prost merely slept in a stable where died a glandered horse, and, further than this, had no connexion whatever with animals so diseased; hence we may reasonably conclude that this unfortunate man took the disease by contagion, and not by inoculation. This conclusion should serve as a warning to all—to gentlemen as well as grooms, ostlers, farriers, *et hoc genus omne*—how careful and cautious they should be when necessity obliges them to have any connexion with glandered horses.

About the same period, or shortly after, M. Leone, a veterinary surgeon to a dragoon regiment, twenty-nine years of age, and in perfect health, had to open a farcied abscess developed in a horse belonging to his regiment. After the operation, he introduced his hand into the cavity, which was covered with matter, in order to explore the extent of the sore; unfortunately he had at the time a slight scar or abrasion on the index finger of this hand, which changed its appearance in a few days: it increased in size, became very painful, and covered with fungus-like growths. The wound was cauterized, but did not heal for three months. Three days after the operation, and at the same time that the sore on the finger was advancing, M. L. recognized the presence of several painful hard tumors like those of farcy developed at the inside of the left elbow: soon after, the joint itself became painful and swollen; an abscess formed, and was opened; others succeeded; fistulous sores were established, and to this day the arm is still diseased. Six weeks after the operation, the right knee-joint became painful and swollen; the tumors here did not break, but the disease attacked the instep and foot, which were swollen and painful; tumors formed, and soon broke, and still remain open. M. L. had the assistance of several physicians, but without any success. He alleges that he knew many veterinary surgeons who were afflicted with the same unfortunate malady derived from the same source. The foregoing is an example of inveterate chronic farcy.

Very recently we have seen in this metropolis two instances of men suffering from farcy and glanders: one was a groom, the other a farrier. The former was taking care of a glandered horse, and had a small puncture on one of his fingers at the time, which soon began to throb, and on examining it found a dark spot round the puncture; swelling of the second joint of the same finger soon followed, and thence passed on to his arm: so rapid was it in its course, that he was obliged to cut the sleeve of his coat to enable him to withdraw the arm at night; this broke and ulcerated, and shortly after the left leg began to swell and feel hard and knotty. Although this man suffered from incessant pain and want of sleep, it is worth remarking, that the only thing which seemed to cause him any anxiety was the fear (to use his own expression) that "*he had given the disease to a horse that was perfectly sound when he went to attend it, but soon became glandered.*" His own suffering seemed to be lost in this idea.

These are melancholy details, but is it not better that they should be known? They lead us irresistibly to the following general conclusions—

first, that a man is liable to the infection of glanders, a disease hitherto supposed to be peculiar to the horse, the ass, and the mule;—second that farcy, which is only a modification of glanders, may co-exist with that disease, as has been proved by inoculating the virus of the two diseases; as with farcy you may produce glanders, and *vice versa*:—third, that inoculation is not absolutely necessary for the production of glanders or farcy, as sometimes the simple cohabitation with glandered animals seems to produce these diseases effectually, from which we are led to infer that it is contagious:—fourth, that glanders, in its severe form, seems to be an incurable malady, both in man and the horse.

*Prophylactic measures, &c.*—Although it is very true that sportsmen—that gentlemen themselves—rarely meddle with glandered horses, it by no means follows that they should not possess information which might be useful for those in their service who may be obliged to do so; and as there is *no cure* for glanders, every precaution should be taken to *guard against* that *memento mori* disease. The following simple measures are those which we can recommend from considerable experience. Whenever an animal is suspected of being glandered, the groom or person attending it should make a *strong solution of alum*, and keep it by him in the stable: as often as he has occasion to go near the horse, to dress his sores, open an abscess, remove the halter, or administer medicine, he should immerse his hands in the alum solution, and keep them there for some moments; if there is a *cut* on his hand it should be carefully covered with adhesive plaster previously. This is not a mere quack remedy, and anatomists know that well; for prior to examining a brain, the most dangerous part of the dead human subject, they use this very remedy in the same way. Alum is an *astringent*, and by this property it can for a certain time stop the pores of the skin of the hand, and consequently prevent any *absorption* of poisonous matter from taking place. Perhaps *other astringents*, as sulphate of copper, would answer as well, but alum is cheaper, easier managed, less dangerous, and equally efficacious. ERINENSIS.

#### WATERING PLACES—HOOF AIL.

From the New Genesee Farmer.

*Messrs. Editors*—In an editorial article in the December number of the "*Cultivator*," page 184, are remarks on the subject of watering cattle in winter, some of which appear to be objectionable. The sentiment to which I refer is, "that it is no disadvantage to cattle to go a suitable distance to water, but rather a benefit, as promoting circulation in the feet, and thus preventing disease of the extremities." The same idea is advanced in the February number of the same paper, page 22. And putting both articles together, we should conclude the "*suitable distance*" for cattle to travel for their water in winter was from fifty to one hundred rods. And the *advantage* set forth is the exercise which prevents what is called the hoof ail.

"Now it strikes me very forcibly," as the judge says, that this course, both in theory and practice,

is, to say the least, somewhat objectionable. It is the opinion of many, that cattle should not be compelled to go out of their yard for water; and the following among other reasons are adduced. If water cannot be obtained by cattle without travelling one fourth of a mile, they will many times suffer exceedingly for the want of it, rather than go so far for it. If good fresh water can be had by them without going out of the yard, they will drink very much *oftener* than in the other case, especially in cold weather. Again. The oldest and strongest cattle will generally go first to water. When they have drunk, they return, and on their way meet others in the narrow snow-path, and of course drive them back. In which case, the youngest and most feeble of the herd will have much trouble and vexation in obtaining water at all. And again. The amount of manure which is dropped, and for the most part lost, in such case, is very considerable in the course of the winter, and it is by many farmers esteemed a matter of no small importance that *all* the manure should be saved. Some say, even, that they may as well waste the food of cattle as the food of plants.

And besides, when cattle go to a spring to drink, especially if the snow is deep, there will generally be great difficulty in reaching the water on account of the bank of snow and ice, unless they step into it, which cattle are very unwilling to do. I have seen many watering places where cattle, in order to obtain a drop of water, were obliged to get down upon their knees, and even then obtain it with the greatest difficulty.

Neither do I believe the *exercise* of this travel of cattle a considerable distance to water is of any advantage in preventing the hoof ail. But I am very strongly inclined to the opinion, which was advanced some time since by Gen. M. Brooks of Mount Morris, and also by Heman Chapin, esq., of East Bloomfield, to wit, that the "foot ail," or "hoof ail," as it is called, is the result of the *freezing* of the feet. And it would seem more probable that the feet would become frozen by being first wet or covered with mud, than if they were kept dry and clean.

I believe, therefore, most sincerely, that if cattle are kept in a well enclosed, comfortable yard, with open sheds, or hovels even, for their protection from storms, where they can have free and uninterrupted access to good water, and plenty of salt, the yard kept constantly littered with straw, so as to make it always dry, and the cattle put up every night in a stable filled to their knees with the same article, they will *never* have the "hoof ail."

I know that with many a very strong prejudice exists against wells for the supply of water for cattle. And probably a stronger prejudice prevails against the labor and trouble of drawing it. But the expense of thus furnishing water for cattle in winter is comparatively trifling; when, by an under drain, or any other contrivance, running water can be conveyed into the yard, so much the better. And in many cases this may be done with very little cost. But where this is impracticable I would pump water for all my cattle, horses and sheep, rather than compel them to go abroad for it even though the distance did not exceed thirty rods.

There are several farmers of my acquaintance, whose cattle, if they have any water at all during the winter, are obliged to travel from one fourth to

three fourths of a mile for it, and when they arrive at the spot where water can be found it is only to be obtained by them through a hole cut in the ice, which may be from six to eighteen inches in thickness.

I have a good spring of water about sixty rods from my barn, and for two or three winters drove my cattle to it, every day, especially in cold weather. But since I have dug a well contiguous to my cattle yard, and put a pump in it, I find it much less trouble to furnish water for my stock in the yard than it was even to visit the spring every day to see that it was attainable there. And besides, there is much less quarreling among the cattle, and it is so much more comfortable for them to drink from a trough conveniently situated, that I would not be without this appendage to my barn yard, even though it should cost me \$100.

And moreover, all the manure of the whole herd is in the yard, intermixed with the straw and litter thereof, in good condition for spring use, which is a matter of no small importance.

These, and such like, are the reasons why I am opposed to the practice of sending cattle from fifty to a hundred rods for water in winter, expressed, however, with due deference to the opinions of more experienced herdsmen.

**Winter protection.**—I am aware there are many farmers who think it a matter of no consequence, whether our domestic animals are afforded any protection from the severity of the winter. It is probably true that most of them will live through the winter without it, if they are well fed. But are we not taught a lesson on this subject from the habits of wild animals? Not one of them, as far as my recollection extends, is without, or does not provide himself with, comfortable shelter or home for the winter. Are we not told, also, from authority which should not be disregarded, that the merciful man is merciful to his beast? And where is the farmer, who by a profusion of the blessings of a merciful Providence is made comfortable, can be unmindful of his domestic animals, from which he receives his food, and his raiment, and afford them that protection from the chilling blasts of winter, by which they are rendered comfortable not only, but are thereby rendered much more profitable.

Another very great advantage of stabling cattle is the saving of feed from waste. I have seen farmers, otherwise respectable, throw their hay upon the ground when covered with mud and filth, for the food of cattle, horses and sheep all in the same yard. In which case one half, at least, of the hay, was trod into the mud and water. But where cattle are stabled, each having his mess by himself, and then the younger and weaker animals unexposed to the encroachment of the older and stronger, consume their food with peacefulness and contentment, without annoyance and without waste.

Still another advantage to be derived from this course of a plentiful use of straw every day in littering the yard and stable is, the animals are not only kept dry and comfortable, but the straw is all turned to a good account. There are many farmers who seem not to know what to do with their straw. Year after year it is suffered to accumulate in immense piles about the barn, till it becomes a nuisance. But if it is daily scattered in the yard for the cattle to pick upon through the day, and

used for bedding in the stables, it will thus become impregnated with the liquids of the yard and stables and mixed with the animal manure thereof, and thereby the quantity of manure for spring use will be greatly increased. By such a course a small stock, say of fifteen head of cattle, seventy-five sheep, and three horses, will supply three hundred loads of good manure for the corn and potato crop the ensuing season. The straw, thus spread frequently in the yard to some extent, is eaten by the stock, the balance absorbs the juices of the yard, becomes saturated therewith, and its value thus rendered four-fold greater than if it were applied in its dry state.

Yours, &c. W. PARSONS.

*Thorn Hill, near Lockport, Dec., 1840.*

#### THE CULTIVATION OF HEMP IN KENTUCKY.

From the Agriculturist.

[The following article, first published in the *Complete Farmer*, was written by the Hon. Henry Clay.]

The preparation of the ground for sowing the seed is by the plough and horses, until the clods are sufficiently pulverized or dissolved, and the surface of the field is rendered even and smooth. It should be as carefully prepared as if it were for flax. This most important point, too often neglected, cannot be attended to too much. Scarcely any other crop better rewards diligence and careful husbandry. Fall or winter ploughing is practised with advantage; it is indispensable in old meadows, or old pasture grounds, intended for producing hemp.

Plants for seed are ordinarily reared in a place distinct from that in which they are cultivated for the lint. In this respect, the usage is different from that which is understood to prevail in Europe. The seeds which are intended to reproduce seeds for the crop of the next year, are sowed in drills about four feet apart. When they are grown sufficiently to distinguish between the male and female stalks, the former are pulled and thrown away, and the latter are thinned, leaving the stalks separated seven or eight inches from each other. This operation is usually performed in the blooming season, when the sexual character of the plants is easily discernible; the male alone blossoming, and, when agitated, throwing off farina, a yellow dust or flour, which falls and colors the ground, or any object that comes in contact with it. A few of the male plants had better be left, scattered through the drill, until the farina is completely discharged, for an obvious reason. Between the drills a plough is run sufficiently often to keep the ground free from weeds and grass; and between the stalks in each drill the hoe is employed for the same object. The seed plants are generally cut after the first smart frost, between the 25th September and the middle of October, and carried to a barn or stack-yard, where the seeds are easily detached by the common flail. They should be gathered after a slight, but before a severe frost; and, as they fall out very easily, it is advisable to haul the plants on a sled, and if convenient, when they are wet. If transported on a cart or wagon, a sheet should be spread to

catch the seed as they shatter out. After the seeds are separated, the stalks which bore them being too large, coarse, and harsh, to produce lint, are usually thrown away; they may be profitably employed in making charcoal for the use of powder-mills. In Europe, where the male and female plants are promiscuously grown together in the same field, both for seeds and for lint, the male stalks are first gathered, and the female suffered to remain growing until the seeds are ripe, when they are also gathered; the seeds secured and lint obtained, after the rotting, from both descriptions.

After the seeds are thrashed out, it is advisable to spread them on a floor, to cure properly and prevent their rotting, before they are finally put away for use the next spring. Seeds are not generally used unless they were secured the fall previous to their being sown, as it is believed they will not vegetate if older; but it has been ascertained that when they are properly cured and kept dry, they will come up after the first year. It is important to prevent them from heating, which destroys the vegetating property, and for that purpose they should be thinly spread on a sheltered floor.

The seeds, whether to reproduce seeds only, or the lint, are sowed about the same time. Opinions vary as to the best period. It depends a good deal upon the season. The plant is very tender when it first shoots up, and is affected by frost. Some have sowed as early as the 1st of April; but it is generally agreed, that all the month of May, and about the 10th of it especially, is the most favorable time. An experienced and successful hemp grower, in the neighborhood of Lexington, being asked the best time to sow hemp, answered, immediately before a rain. And undoubtedly it is very fortunate to have a moderate rain directly after sowing.

When the object is to make a crop of hemp, the seeds are sown broad-cast. The usual quantity is a bushel and a half to the acre; but here again the farmers differ, some using two bushels or even two and a half. Much depends on the strength and fertility of the soil, and the care with which it has been prepared, as well as the season. To these causes may be ascribed the diversity of opinion and practice. The ground can only sustain and nourish a certain quantity of plants; and if that limit be passed, the surplus will be smothered in the growth. When the seeds are sown, they are ploughed or harrowed in; ploughing in best in old ground, as it avoids the injurious effect of a beating rain, and the consequent baking of the earth. It would be also beneficial subsequently to roll the ground with a heavy roller.

After the seeds are sown, the labors of the cultivator are suspended, until the plants are ripe, and in a state to be gathered; every thing in the intermediate time being left to the operations of nature. If the season be favorable until the plants are sufficiently high to shade the grounds (which they will do in a few weeks, at six or eight inches' height,) there is strong probability of a good crop. When they attain that height, but few articles sustain the effect of bad seasons better than hemp.

It is generally ripe and ready to be gathered about the middle of August, varying according to

the time of sowing. Some sow at different periods, in order that the crop may not all ripen at the same time, and that a press of labor in rearing it may be thus avoided. The maturity of the plant is determined by the evaporation of the farina, already noticed, and the leaves of the plant exhibiting a yellowish hue: it is then generally supposed to be ripe, but it is safest to wait a few days longer. Very little attentive observation will enable any one to judge when it is fully ripe. In that respect it is a very accommodating crop, for if gathered a little too soon, the lint is not materially injured, and it will wait the leisure of the farmer some ten days or a fortnight after it is entirely ripe.

Two modes of gathering the plants are practised, one by pulling them up by the roots, an easy operation by an able-bodied man, and the other by cutting them about two inches (the nearer the better) above the surface of the ground. From a quarter to a third of an acre is the common task of an average laborer, whether the one or the other mode is practised. The objections to pulling are, that the plants with their roots remaining connected with them, are not afterwards so easily handled in the several operations which they must undergo; that all parts of the plant do not rot equally and alike, when exposed to the dew and rain: and, finally, that before you put them to the brake, when the root should be separated from the stalk, the root drags off with it some of the lint. The objection to cutting is, that you lose two or three inches of the best part of the plant nearest the root. Pulling being the most ancient method, is most generally practised. I prefer, upon the whole, cutting; and I believe the number who prefer it is yearly increasing. When pulled, it is done with the hand, which is better for the protection of an old leather glove. The laborer catches twenty or thirty plants together, with both hands, and by a sudden jerk draws them without much difficulty. The operation of cutting is performed with a knife, often made out of an old scythe, resembling a sickle, though not so long, but broader. This knife is applied much in the same way as the sickle, except that the laborer stoops more.

Whether pulled or cut, the plants are carefully laid on the ground, the evenest the better, to cure; which they do in two or three days, in dry weather. A light rain falling on them whilst lying down is thought by some to be beneficial, inasmuch as the leaves, of which they should be deprived, may be easier shaken off or detached. When cured, the plants are set up in the field in which they were produced, in shocks of convenient size, the roots or but-ends resting on the ground, and the tops united above by a band made of the plants themselves. Previous to putting them up in shocks, most cultivators tie the plants in small hand bundles of such a size as that each can be conveniently held in one hand. Before the shocks are formed, the leaves of the plants should be rapidly knocked off with a rough paddle or hooked stick. Some suffer the plants to remain in these shocks until the plants are spread down to be rotted. Others, again, collect the shocks together as soon as they can command leisure, (and it is clearly the best,) and form them into stacks.

A few farmers permit these stacks to remain

over a whole year, before the plants are exposed to be rotted. By remaining that period in stalks, the plants go through a sweat, or some other process, that improves very much the appearance, and, I believe, the quality of the lint, and this improvement fully compensates the loss of time in bringing it to market. The lint has a soft texture and a lively hue, resembling water-rotted hemp; and I once sold a box of it in the Baltimore market at the price of Russia hemp. In every other respect, the plants are treated as if they were not kept over a year.

The method of dew-rotting is that which is generally practised in Kentucky. The lint so spread is not so good for many purposes, and especially for rigging and ships, as when the plants have been rotted by immersion in water, or, as it is generally termed, water-rotted. The greater value, and consequently higher price of the article, prepared in the latter way, has induced more and more of our farmers every year to adopt it; and if that prejudice were subdued, which every American production unfortunately encounters when it is first introduced and comes in contact with a rival European commodity, I think it probable that in a few years we should be able to dispense altogether with foreign hemp. The obstacles which prevent the general practice of water-rotting are, the want of water at the best season for the operation, which is the month of September; a repugnance to the change of an old habit; and a persuasion, which has some foundation, that handling the plants after their submersion in water during that month is injurious to health. The first and last of these obstacles would be removed by water-rotting early in the winter, or in the spring. The only difference in the operation, performed at those seasons and in the month of September, would be, that the plants would have to remain longer in soak before they were sufficiently rotted.

The plants are usually spread down to be dew-rotted from the middle of October to the middle of December. A farmer who has a large crop on hand puts them down at different times for his convenience in handling and dressing them. Autumnal rotting is more apt to give the lint a dark and unsightly color than winter rotting. The best ground to expose the plants upon is meadow or grass land, but they are not unfrequently spread over the same field on which they grow. The length of time they ought to remain exposed depends upon the degree of moisture and the temperature of the weather that prevail. In a very wet and warm spell five or six weeks may be long enough. Whether they have been sufficiently rotted or not is determined by experiment. A handful is taken and broken by the hand or applied to the brake, when it can be easily ascertained, by the facility with which the lint can be detached from the stalk, if it be properly rotted. If the plants remain on the ground too long, the fibres lose some of their strength though a few days longer than necessary, in cold weather, will not do any injury. If they are taken up too soon, that is, before the lint can be easily separated from the woody part of the stalk, it is harsh, and the process of breaking is difficult and troublesome. Snow-rotting, that is, when the plants, being spread out, remain long enough to rot, (which however requires a greater length

of time,) bleaches the lint, improves the quality, and makes it nearly as valuable as if it had been water-rotted.

After the operation of rotting is performed, the plants are again collected together, put in shocks or stacks, or, which is still better put under a shed or some covering. When it is designed to break and dress them immediately, they are frequently set up against some neighboring fence. The best period for breaking and dressing is in the months of February and March, and the best sort of weather, frosty nights and clear thawing days. The brake cannot be used advantageously in wet or moist weather. It is almost invariably used in this state out of doors and without any cover; and to assist its operation, the laborer often makes a large fire near it, which serves the double purpose of drying the plants and warming himself. It could not be used in damp weather in a house without a kiln or some other means of drying the stalks.

The brake in general use is the same hand brake which was originally introduced and has been always employed here, resembling, though longer than the common flax brake. It is so well known as to render a particular description of it, perhaps, unnecessary. It is a rough contrivance, set upon four legs, about two and a half feet high. The brake consists of two jaws with slits on each, the lower jaw fixed and immovable, and the upper one movable, so that it may be lifted up by means of a handle inserted into a head or block at the front end of it. The lower jaw has three slats or teeth, made of tough white oak, and the upper two, arranged approaching to about two inches in front, and in such manner that the slats are about six or seven feet in length, six inches in depth, and about two inches in thickness in their lower edges; they are placed edgewise, rounded a little on their upper edges, which are sharper than those below. The laborer takes his stand by the side of the brake, and grasping in his left hand as many of the stalks as he can conveniently hold, with his right hand he seizes the handle in the head of the upper jaw, which he lifts, and throwing the handful of stalks between the jaws, repeatedly strikes them by lifting and throwing down the upper jaw. These successive strokes break the woody or reedy part of the stalks into small pieces or shreds, which fall off during the process. He assists their disengagement by striking the handful against a stake, or with a small wooden paddle, until the lint or bark is entirely clean, and completely separated from the woody particles.

After the above operation is performed, the hemp may be scutched, to soften it, and to strengthen the threads. That process however, is not thought to be profitable, and is not therefore generally performed by the grower, but is left to the manufacturer, as well as that of beating and hackling it. Scutching is done by the laborer taking in his left hand a handful of the lint, and grasping it firmly; then laying the middle of it upon a semi-circular notch of a perpendicular board of the scutching-frame, and striking with the edge of the scutch that part of the lint which hangs down on the board. After giving it repeated strokes, he shakes the handful of lint, replaces it on a notch, and continues to strike and turn all parts of it, until it is sufficiently cleansed, and the fibres appear to be even and straight.

The usual daily task of an able-bodied hand at the brake is eighty pounds weight; but there is a greater difference not only in the state of the weather and the condition of the stalks, produced by the greater or less degree in which they have been rotted, but in the dexterity with which the brake is employed. Some hands have been known to break from one hundred and fifty to two hundred pounds per day. The laborer ties up in one common bundle the work of one day, and in this state it is taken to market and sold. From what has been mentioned, it may be inferred, as the fact is that the hemp of some growers is in a much better condition than that of others. When it has been carelessly handled or not sufficiently cleansed, a deduction is made from the price by the purchaser. It is chiefly bought in our villages, and manufactured into cotton bagging, bales, and other kinds of untarred cordage. The price is not uniform. The extremes have been as low as three and as high as eight dollars for the long hundred, the customary mode of selling it. The most general price during a term of many years has been from four to five dollars. At five dollars it compensates well the labor of the grower, and is considered more profitable than any thing else the farmer has cultivated.

The quantity of net hemp produced to the acre is from six hundred to one thousand weight, varying according to the fertility and preparation of the soil and the state of the season. It is said that the quantity which any field will produce may be anticipated by the average height of the plants throughout the field. Thus if the plants will average eight feet in height, the acre will yield eight hundred weight of hemp; each foot in height corresponding to a hundred weight of the lint.

Hemp exhausts the soil slowly, if at all. An old and successful cultivator told me that he had taken thirteen or fourteen successive crops from the same field, and that the last was the best. That was, however, probably owing to a concurrence of favorable circumstances. Nothing cleanses and prepares the earth better for other crops (especially for small grain or grasses) than hemp. It eradicates all weeds, and when it is taken off, leaves the field not only clean, but smooth and even."

#### IMPROVED BREED OF HOGS.

From the Kentucky Farmer.

There has been much controversy in Kentucky in reference to the relative merits of the various breeds of improved hogs; and the subject has indeed engendered some of the spirit of partizanship. It is not our purpose to take a side in the controversy; being determined to deal with the utmost impartiality towards the advocates of each of the various breeds. Our object shall be, in conducting this paper to take such a course as will serve to bring out the facts referring to the merits of all subjects in which the farmer is interested. While we deem an honest collision of sentiment favorable to the investigation of truth; we deprecate that partizan spirit which has an exceedingly keen vision in looking at one side of a subject and is utterly blind in viewing the other. Long ago, and repeatedly since, we proposed a test by which the relative merits of the various breeds of hogs could be satisfactorily ascertained; and that was, to rear a large number of each

breed, under the usual mode of treatment which the county is compelled to adopt, noting carefully all the facts involved in the experiment. When this proposition was first made, it was objected, that the demand for blooded pigs, for breeders, was too great to allow a sufficient number of them to be devoted to the experiment. The "pig business" is indeed too profitable to be abandoned for the sake of making experiments and we have strong doubts whether any of the prominent breeders of the various vaunted breeds can ever be induced to go into such an experiment as is proposed. But the object can be effected in spite of them and without their co-operation. Many farmers have purchased blooded pigs, not for the purpose of going into the "pig business," but of improving their stock; and they will rear their progeny; not under the stuffing and gorging system, but in the usual way, and the results of such treatment will indicate the best breeds. It cannot be long till we shall have reports of practical experiments, showing the entire treatment, the ages, the amount of food consumed, the weights attained, travelling qualities, &c. &c. This is the kind of information we have sought to elicit, because we believe it the only satisfactory kind.

We have some facts, relating to various breeds, which we take the liberty of gleanings from our private correspondence, believing that the writers can have no objection to their publication. The facts are interesting in themselves and may lead to the development of others more explicit and satisfactory.

We begin with the statement of an experiment by Mr. B. P. Gray of Woodford, made in the usual practice of rearing hogs. It will be recollected that we published an experiment (Vol. 3, p. 142,) of this gentleman upon half blood Thin rinds, highly favorable to that breed. The present experiment relates to some pigs by an Irish boar out of half blood Thin rind sows, and a comparison between them and some pigs of scrub breed. The result will astound two classes of men,—those who deny the great superiority of blood and those who affect to ridicule the Irish and Thin rind hogs, for neither of them are now considered the "fashionable" breed. We have the notes before us furnished by Mr. Gray and no one who knows him will doubt the correctness of his statements. And it is proper to say that he is not a "pig dealer;" his hogs were reared and killed for the use of his own family; and no one must regard this notice either as a "puff or an advertisement in disguise."

He killed 46 hogs last fall. Of these, 22 were scrubs, pigged in October, 1839; the residue were out of half blood Thin rind sows by an Irish boar, 22 of them pigged in January 1840, and the other two pigged in October 1839 about the time of the scrubs. The scrub pigs were well wintered in the usual way; and as soon as the blooded pigs were weaned, the whole 46 were turned together and well treated. The clover was good but the rye was very indifferent [nobody grew good rye last summer.] The whole were put up together in a pen on the 15th Sept. 1840, to be fattened on corn. Now mark the result.

The 22 blooded pigs, pigged in January 1840, slaughtered November 19, ten months old, weighed neat, 5120 pounds, being an average of 232 pounds each, neat.

The 22 scrubs, pigged in October 1839, slaugh-

tered December 17, near a month later, when fourteen months old, weighed neat, 3930 pounds, being an average of 178 pounds each, neat.

So the scrubs, four months older, and fed on corn near a month longer, averaged each 54 pounds less than the average of the blooded pigs.

The two blooded pigs, pigged about the same time of the scrubs, and killed a month sooner, weighed respectively 306 and 298 pounds, neat.

The heaviest blooded pig weighed, neat, 296 pounds, the lightest, 193; the heaviest scrub, 206, lightest, 104.

These facts need no comment; they speak for themselves and every farmer can make his calculations as to the relative value of blooded and common pigs. The scrub pigs were considered of good stock; and we presume the weights they attained will prove them equal to the average of common hogs.

Mr. Joseph Reed, of Montgomery county, had 6 pigs, pigged about the first of April, by Dr. Combs' Berkshire boar, out of a common sow, which averaged 175 lbs. neat, killed about the middle of November, when seven and a half months old—ordinary treatment.

We will now quote from a letter by Dr. Martin, dated Dec. 7, 1840. He is a distinguished breeder of cattle and various breeds of hogs, but is understood to be an advocate of the Woburn hogs:

"Now for avoidupois. I sold to Henry Savory, five hogs of Woburn blood, that were two and three years old—three year olds had been used as boars. No. 1, weighed 640 lbs; No. 2, 630; No. 3, 660; No. 4, 748; No. 5, 824. 7½ off each for weight of breeding—I have sent this to the Kentucky Farmer.

"I had some pigs, pigged 23d of last December; they were kept with their mother, after some cattle, until April, when they were turned on grass, and 1st July upon rye that was less than two bushels to the acre, (what was cut and I cut the best of it,) after which about a hundred were turned upon a stubblefield and they had access to an apple-orchard of one hundred trees, winter fruit, very little down until a storm 3d October. They stayed here until put up to fatten and were killed 17th November and weighed neat meat 261. These were the refuse of the Woburns—I don't know what the best would have done. I killed a pig, a little older than Gov. Wickliffe's boar which was pigged 14th February, with same kind of treatment as the last, that weighed 250 lbs. neat. I killed a refuse pig, much the least in the litter, pigged 14th May, half white Berkshire and half Woburn—killed Nov. 17, that weighed 110 neat meat. The best of this litter, I think, (a mere matter of opinion,) would have weighed 200 lbs. each."

The statement in reference to the big hogs, so far as relates to the expense of their keep, the quantity of food consumed, and the length of time they were fully fed, is about as definite and satisfactory as the phrase—"big as a piece of chalk." And the Doctor had been more satisfactory, in reference to the pigs, had he stated the length of time they were corn fed.

Our next quotation is from a letter by A. B. Allen, Esq., of Buffalo, New York, a distinguished breeder and advocate of Berkshire hogs, under date, Columbus, Ohio, December 9, 1840; and we are glad to find one so eminent, concurring in our views as to the proper mode of ascertaining the real merits of the various breeds:



"But to return to Berkshires. I know that the Woburns can beat the present Berkshires\* in weight at same age, but that is nothing. The only fair and proper test would be such as you propose, 50 or 100 head of each grown up and fattened in the common farming way of the country, an accurate account kept of their food, and then see which has given the most and best pork for it; nothing less than this would be satisfactory. But can Dr. Martin show a gain of upwards of three months, of three pounds per day, as the Brentnalls made a Berkshire barrow do last winter? Vide their statement in March or April number of Cultivator. I have just made a most superb importation from England and have every satisfactory evidence from the persons who bred them, that the families from which they are derived will gain  $1\frac{1}{2}$  to 2 lb. per day, made barrows and sowed in their feed, for the first year of their lives. A pair of pigs, sent with one of the sows, has gained since littered in April  $1\frac{1}{2}$  lbs. per day each up to the present time, and one of the boars actually weighed on the scales, on arrival, 520 lbs. at 18 months old, though thin in flesh. My brother will make a statement of them either in his own or my name, for December or January number of the Cultivator. They had not arrived when I left; but he says they show great vigor and constitution; and, notwithstanding their size, are equal in fineness of point to my very best shaker and other stock. The oldest boar, he adds, is superior to any thing he ever saw, not excepting the last sent out by Hawes to Lossing and the Brentnalls—their color and characteristics same as Hawes' importations. The stock of my Prince Regent, imported last fall, has proved very fine and has taken premiums wherever exhibited, but it is hardly large enough to suit Kentucky. In this valley, [the Scioto] and in New York, 'tis much admired. Breeders here tell me they don't want a *bigger hog than 300 lbs.* at 18 months; and a few large Berkshires I brought down won't sell at all among them, while the medium size go rapidly. As to their driving, I know the longest legged ones can't be beaten in mud or any where else. I give you an extract of a letter just received from John Mahard, jr., of Cincinnati, one of the largest pork packers there. He wrote me unsolicited in the way of business.

"We have just got through cutting and packing 1280 hogs, for J. B. Kenney, esq. and others, who drove them from near Georgetown, Ky., a distance of about 80 to 100 miles and in the drove they had five or six half blood Berkshires and they stated that they stood the journey *better than any other hogs in the drove*; and although several of the common hogs gave out and had to be left behind, every one of the half Berkshires came safe through to market."

To be sure this is but a small and partial experiment, but it goes to prove my assertions regarding their driving qualities; and as Mr. Kenney is one of your neighbors, I suggest your obtaining the statement from him and publishing it."

We shall conclude now, by an extract from a letter written by a gentleman of Madison. (that great hog raising county) to a correspondent in Clarke, who transcribed it in a private letter un-

der date December 23, but with no view of its publication. As to the conclusions of the writer favorable to one breed and unfavorable to others, they would carry more weight, had he stated the facts and grounds on which they are based. But the writer appears to have exerted an active spirit of investigation, and he, too, coincides with us, that the gorging system does not furnish the true test. We would thank him for his facts.

"Mr. — and myself endeavored at the Winchester fair to determine which, among the several rival breeds of hogs, is the best. We carefully examined the specimens of each that were exhibited there, and concluded that the very best of each, reared in the best manner, is not a fair test of their relative value or their merits; because we sometimes see individual animals possessing that conformation which experience has proved constitutes them the most valuable of their species, which has been the result of accident aided by extraordinary care and judgment in rearing, and is not a characteristic of their race. It is sometimes the case too, that this form is imparted by a single cross and never appears in their progeny. It is a fact also, that one particular breed of fine animals, crossed upon an inferior race, gives to the produce but little if any of its own merits; whilst a different breed, crossed upon an inferior race, will make a great improvement. We therefore determined that the best mode of settling this matter would be to examine those different breeds in *general* and not in particular individuals: to see them under indifferent as well as good treatment, and inspect the cross of each upon our common stock kept as stock hogs generally are. This course of examination we commenced at your house. We have since looked at other herds. We have seen the cross of the Woburn, the Berkshire and the Grazier, upon the various breeds of scrub hogs, and after a tedious and rigid investigation of the claims of all of them, through their crosses and in themselves, for all the purposes for which they are designed, we unhesitatingly pronounce the Woburn the best hog. We have seen them crossed in every way and the result has been invariably, an obvious and decided improvement. I could give you some facts in relation to other favorite breeds, crossed upon the scrubs, of which perhaps you are not apprized, that detract much from their merit and high standing in my esteem; but as you are the owner of all those different breeds, I will say nothing here upon that subject."

This is strong language, and we repeat that the writer should substantiate his opinions by the facts.

We have now had the various breeds long enough to judge of them by their real merits; and we repeat our call for facts, ascertained in practice. We mean to show fair play and do full justice to all; and if the facts regarding the merits and relative value of each of the vaunted breeds, be not made known, it shall be the fault of the breeders themselves. Give us, then, *facts*, proving the superiority of your various breeds. State your treatment fully and fairly and then give us your arguments in avoirdupois. No humbugging puffs will be admitted; we have had, in all conscience, too much of them already. Intelligible, practical facts are now due; let's have them.

\* But we shall anon with others I am going to import



THE FOURTH AGRICULTURAL MEETING.—  
LIVE STOCK.

From the Boston Courier.

The fourth agricultural meeting was held at the State House, on the evening of the 4th inst., Hon. D. P. King in the chair. The subject of discussion was live stock.

Mr. Colman introduced the subject by a succinct account of the various breeds which had been and were to be found in the country; enumerating and describing the native stock, the Devon, the Hereford, the Yorkshire, the Holderness, the Alderney, the improved Durham Short Horn, the Ayrshire, and lastly a new race, which, by the skill and perseverance of a gentleman from whom the meeting would hear presently, had been formed in our vicinity; and in some respects was not surpassed by any breed known among us, or in the world, particularly for the richness of their milk and the amount of butter obtained from it.

He proceeded to speak of some remarkable animals of our native breed which had fallen under his observation. The Oakes cow, which in one instance made 19½ lbs. butter per week; an average of more than 16 lbs. per week for three months in succession, and 484 lbs. from 1st May to 30th December in one year, besides suckling a calf for six weeks; of the Nourse cow, formerly owned by Col. Pickering, from which more than 14 lbs. per week were obtained for four successive months; of a cow at Stockbridge, which, in three successive years, made 900 lbs. butter; of a cow owned in Shelburn, which produced 335 lbs. butter in one year; and a cow in North-Adams, which produced 425 lbs. butter in one year.

These were extraordinary examples. Others might be found. But they are individual instances; and among our native stock we have no established race of animals, whose excellent qualities may be pronounced fixed by always breeding from the very best, unless it be in the case already referred to.

In England, great attention for more than half a century had been paid to this subject, and by the highest skill and the most determined perseverance, valuable races had been formed. Bakewell may be said to have begun these improvements. The Messrs. Collins pursued it with distinguished ability and liberality. The country patronized and encouraged such improvements by the most liberal prices paid for the improved stock; 1000 guineas having been given at a public sale for the Messrs. Collins's celebrated bull Comet; and 400 and 600 guineas having been sometimes given for a cow, and more than 100 guineas for a calf.

Mr. Colman proceeded to say that no permanent improvement can be made but by intelligence of observation and long continued perseverance in selecting the best from the best, and breeding animals with a special reference to the most desirable qualities. We have great advantages in this country, inasmuch as we can at once avail ourselves of the improvements made in Great Britain; and if the introduction of their stock would be an advantage, the best animals could be obtained at once.

Mr. Colman spoke of the various importations which had been made by different public-spirited individuals, many of which he had had the plea-

sure of seeing, especially some of the splendid importations made by spirited citizens from Ohio, the beauty of which animals, their admirable symmetry, and the perfection to which art, guided by the most philosophical principles, had carried these improvements, excited the highest admiration. He then proceeded to speak of the distinguished liberality of a gentleman in the vicinity of Boston, who, with a view to obtain the best milking stock known abroad, had imported largely of the Ayrshire, a stock deemed abroad the best stock known for dairy purposes. This same gentleman, with his customary public spirit, had given away many of these animals with a view to the improvement of the stock and had in the most liberal manner rendered these improvements accessible to any farmers who chose to avail themselves of them. The Massachusetts Agricultural Society, with their usual liberality, had done the same.

Mr. Colman having gone to some extent into the characteristics of the different breeds, from personal observation, inquiry, and experiment, concluded by saying that a gentleman present by his invitation, who was well skilled in the subject now under discussion, and was himself the founder of the race of animals to which he had referred, would detail fully his progress and success in forming this new race of animals; and would give them, before the meeting closed, ocular demonstration of the superlative quality of their cream.

Col. Samuel Jaques of Charlestown, the well known superintendent of the Stock Farm at Ten Hills, then addressed the meeting at some length, but with much good sense, and excellent humor.

He had long personal experience in this case. He deemed the improvement of the live stock of our country matter of the highest moment to the agricultural and the whole community. There were several varieties of animals, as already referred to. He was particularly desirous of finding a race exactly suited to our soil and climate.

We may, perhaps, form a breed better adapted to our purposes than any foreign breed now known. But as any great improvement could not be carried through and established under half a century, it would be wise to avail ourselves of what had been done abroad, as far as it might meet our purposes.

In 1819, he gave \$600 for a bull calf, in order to make a cross with some of our best cows.—Much skill is requisite in selecting the cow, as well as the bull; but out of a thousand brought to him, there was not one, which he found suitable.

Ralph Haskins of Dorchester had obtained, from a farmer's yard in Groton, a cow distinguished for the extraordinary richness of her milk. She was of a deep red; resembling, in some respects, the Devon race; but not known to have any foreign blood in her. She had a capacious body, and fine silky feel. This cow was crossed with Cælebs, an imported bull, of the Durham blood. Cælebs had produced some remarkable milkers. It was in this way, Mr. Jaques thought, best to lay the foundation of an improved stock. His object was to obtain a stock eminent for their dairy properties.

Having succeeded, according to his expecta-

tions, in producing a race distinguished for the richness of their milk, he chose to denominate it the Cream-pot breed; and he had now proceeded as far as the fifth generation, and had already sixty animals, more or less tintured with this blood. He went, as he said, for blood, and whatever surprise it might excite, he was confident in saying, that he would breed animals to order. He would proceed upon the same principle as that on which the painter applies his lamp-black to his white lead; and in respect to cattle, as rumps of beef sold in market for a shilling per pound, and shins for three cents, he would seek to make the rumps large, and the shins small.

Farmers admitted this principle of breeding, in respect to sheep; so they would cross their Merino with their native, until, by successive steps, they improved their wool from one half to three quarters and seven eighths grade. All farmers would agree to make wool to order, if you would promise them one dollar per pound. It is the same with cattle. Stock on the Exchange may be changed and transferred at once. Live stock is not disposed of so easily. It requires four years to produce a calf, and eight years a second, that is, before you can determine their properties.

The race-horse is not popular among us. We want a horse that will do all kinds of work. This was obtained by a cross of the full-blood race-horse with the thorough-bred Normandy. This colt was given, by a gentleman in Canada, to a Vermont farmer by the name of Morgan. This was the foundation of a distinguished breed. This horse would run eighty rods in fifteen seconds. He could pick out a Morgan horse, among a hundred. The combination of two of the best bloods, in this case, gave a general character. This horse is of eminent endurance, docile, obedient, rugged; and is a full hand for the best whip.

Cælebs had no pedigree, but there was good reason to believe that he was a direct descendant from the stock of Messrs. Collins. He was confident that by a cross of Cælebs with a suitable native cow, he should succeed in his object of obtaining rich milk and excellent butter-properties. He had now in milk the third generation, and four quarts of her milk had made one pound of butter. The milk contains so little that cannot be made into butter, that in his belief one hundred pounds of her cream would produce ninety-five pounds of butter.

He had now twenty-eight cows and heifers of this stock; and at his pleasure he could breed his stock with orange color or yellow round the eye, of a mahogany color, white bags and black teats, as might be desired. This may seem incredible, but not more incredible than the present rate of travelling on railroads would have seemed to an individual who lived a hundred years ago.

Most cows which are used by the farmers for breeders, have no more claims for that object than a skunk would have. He prefers, in selecting a suitable breeder, to trust his hands than his eyes. He wants to have a silky, elastic feel. The difference in the feel of animals, that is, of their skin, is like the difference between a two dollar negro-cloth and a fourteen dollar broadcloth. The difference in fattening animals arises from the thriftiness of their constitutions, so that while upon half a bushel of meal per day one ox would yield only seventy-five pounds of rough tallow, another, of a

better kind, would produce a hundred and seventy-five pounds. He was told by one visitor that he had oiled his stock; and on a visit to Mr. Phinney's farm in Lexington, a farmer who had been at his place found himself able, among half a dozen calves, to select two of the Cream-pot breed, simply by the feel.

The breeding of swine had been carried to great perfection among us. Improvements in neat stock few would undertake. Sheep are very profitable stock, with an amount adapted to the size of the farm. The Merino and Saxony are deemed too tender for our climate, and produce mutton of small size for the market. The Saxony wool is too fine for general use. He had had the Leicester, the Lincolnshire, the new Leicester, the Tunisian sheep, and the South-Down. For profit, he upon the whole decidedly preferred the South-Down. They were quiet, broad and flat in the back, full in the twist, round in the thigh, and presented a fine leg of mutton. The difference between a South-Down leg of mutton, and that of a common sheep, was the difference between the thigh of a goose and that of a dunghill fowl. Sheep give a valuable yearly return, but much depends on the kind.

The Berkshire and the Mackay breed of swine do not cost so much in the keeping as the common breeds, but the return is much greater. He insists much upon the breed. You cannot make a race-horse out of a Canadian runt, if you should have a groom at each leg; nor by any art bring him to run four miles at a heat, and repeat. You might as well attempt to produce upon a scrub-pear the fruit of the St. Michael's. We cannot do as we will, in many cases, because we have not the means. Most of our farmers have the talent, but few have the capital wherewith to make improvements. In England, capital is applied to agricultural improvements with the utmost readiness, and with a success proportionate to this liberality. Our own agriculture has received a generous impulse, and every friend to his country must wish it increased success.

Mr. Putnam of Danvers then stated that he had seen a heifer of the Cream-pot breed, in Southboro, which he recognized by her silky feel, and her milking properties promised well. She had been injured in two teats, but the milk taken from those two in one week produced seven and three-fourths pounds of butter. The calf took the two uninjured teats. This was in October.

Mr. Sheldon of Wilmington was then kind enough to favor the meeting with some valuable remarks on the subject of working oxen. [The authority of this gentleman is undoubted, from his long experience. He, took by contract the reduction of Pemberton Hill, in Boston, and had at one time 118 yoke of oxen at work there.]

The object of his remarks was to assist the farmer in making a suitable selection of oxen for work. If you desire to have those which would be free to travel and to pull, take those with a long and lean face. Those with short faces will start quick but soon forget the whip. He chooses oxen whose heads are long; whose eyes are sharp, but at the same time pleasant. He thinks that we cannot rely upon black-eyed oxen. (Lord Byron says you cannot rely upon gray-eyed men or women.—Reporter) They are not docile. He

would rely as much upon the eye of an ox as upon that of a man, in making his preferences. He prefers oxen with full bosoms, as indicative of strength. In choosing cattle to travel well, he would have their toes straight forward. If they are inclined outward in travelling, the strain will come upon the inner claw, and they will become foot-sore. If the toe is turned out, the leg will be crooked, and turned in. A crooked stick will not bear a weight so well as a straight one. He would avoid for travellers, oxen with long, pointed feet, and especially an ox whose ankle is larger than his foot. He would have the back straight; if a little concave, not objectionable, but by no means choose an ox with an arched back. For the endurance of hardship, he would have their ribs rounded and projecting; and not so set in, that when they run among the trees they would strike their hips. He much prefers the early trained cattle to those which are late trained. This training cannot be begun too soon, only proportioning the labor put upon them to their strength. The Maine oxen formerly had the preference over all others, because they were put to the yoke when calves. Powers of labor or endurance depend greatly upon exercise and exposure. A tree, standing alone in a pasture, where it is beat about by winds and storms, will be much more firmly rooted than one grown in a forest, where it is sheltered and protected by others. Take twin brothers—bring up one behind the counter of an English goods store, and put the other into a blacksmith's shop, and the superiority of muscular energy will not remain doubtful. Very much depends on the manner of using oxen. They may suffer much from severe hardships, like a tree tried by a hurricane.

He proceeded by remarking on the general opinion, in which he did not concur, that a high-lifted horse could not be properly employed before oxen. He would never, in breaking a horse to this labor, tackle him in the afternoon. He would spend a day in coaxing him, and never allow him, under any circumstances, to be struck. When he began with tackling a colt, he would have a horse in sight, towards whom he might be directed. He would put him before oxen, but never with a load that it would be difficult to draw; and in breaking a colt, he would never try to drive him away from home.

Mr. Sheldon has since informed us, that his oxen at work in Boston, averaged nineteen miles travel per day; and that he wished to have added some remarks on the shoeing of oxen, in which he thinks great errors are committed. For travelling on the road, the shoe of an ox is almost always made too short. It should completely cover the bottom of the heel.

Mr. Jones of West-Tisbury, being called on by the chair, joined in the discussion.

He deemed an agricultural life as highly pleasant and respectable. The raising of stock, as a branch of husbandry, had many attractions. He had resided in the best agricultural districts of England three years, and was familiar with their operations. He had attended many of their cattle shows. Much had been done in this country, but from any thing accomplished here, little idea could be formed of what had been effected there. England seems to have carried the art of breeding to a high degree of perfection. He considered that

greater improvements had been made in sheep than in cattle. Those of us who have not seen them, can form a very imperfect idea of the English flocks. He had seen large flocks of the Leicesters and the Teeswaters, not one of which would weigh less than 150 pounds. In some districts, the long-woolled sheep are preferred. On the Downs, the South Downs. He had seen Mr. Coke's flock, which at that time consisted of 5000. In some districts, the sheep are all bred with yellow faces; in others, with black faces, which illustrates, the principles of breeding laid down by Mr. Jaques.

On our scanty soils the South Downs would undoubtedly pay the most profit. We cannot grow the long wools to advantage. That had better be left to Pennsylvania and Delaware. We demand much mutton for market. On this account the South Downs are to be preferred for us. The fine wools may be advantageously cultivated where mutton is not in so much demand.

We have now very good stocks for animals if we would be careful in the selection. The short horns may answer for many districts in our country; but he believed the middling sized red cattle were to be preferred for us. Our agriculture is not pursued upon a sufficiently liberal scale. We do not employ sufficient capital. He expressed his strong regret that any intention should have been manifested for the discontinuance of the Agricultural Survey. He thought it had been eminently serviceable, and great benefits were to be expected from it. No measure could be adopted more conducive to the improvement and welfare of our agriculture. The agricultural Surveys in England had been worth millions to that country; and he thought it a niggardly policy and unworthy of Massachusetts to hesitate about a few thousands for the advancement of this great and common interest. It was matter of great regret to him that any thoughts should be entertained of discontinuing the survey, which had already received the most favorable notices abroad. The English Agriculture was more improved than any other, and the great impulse to improvement was given by the eminent labors of Arthur Young in his agricultural tours. He hoped that, in addition to the completion of the Agricultural Survey, the State, in the course of five years would have established a Board of Agriculture.

Mr. Putnam made some inquiries of Mr. Jaques on the point whether butter is as good obtained from large quantities as small quantities of milk, as on his father's farm, in the care of 2 cows, one giving 47 or 48 pounds milk per day, and one 35 pounds milk per day in June, and making each about thirteen pounds of butter per week, the quality of the butter from the cow giving the largest quantity was superior to that from the other.

Mr. Jaques was unable to give a definite answer in this particular case. He spoke again of the importance of blood and preserving races pure. Our cattle had been much corrupted by intermixtures. With a view to test his principles he had entered largely into the breeding of rabbits; and it had required the ninth generation and four hundred rabbits to reach the point at which he aimed. Excellent stock were often exhibited at Brighton, but a valuable race could not be obtained without much pains. It would require half a century in some cases to transfer the vigor of constitution of

one race to another. The milk of different cows differed essentially in its richness. A cow exhibited at Brighton, by Hon. William Gray, some years since, gave thirty quarts of milk at a milking, but the milk produced no cream.

Mr. Buckminster, (always strongly inclined to conservatism,) deemed the subject of discussion highly important, and had listened with much approbation to the remarks of Mr. Jaques. They agreed with his own opinions. So long as the imported foreign stock produced nothing better than we already had, he saw no use in importing. He thought we could not improve our stock without stock farms. Few persons are capable of judging accurately. Any man could see the difference between a large and a small hog, but other points were to be determined. He approves highly of Mr. Sheldon's notions of managing stock. He would banish a whip from the farm, and he would have cattle and horses broken and managed with all the gentleness possible.

The time of adjournment having nearly arrived, the meeting were gratified with Mr. Jaques's exhibition of a pot of cream from his celebrated stock. It was of most extraordinary consistency, and was converted into butter by churning in a bowl with a spoon, in the presence of the meeting, in less than one minute, thus completely verifying the declarations which he had made.

The meeting was exceedingly well attended. The interest in these discussions increases, and with that a general and strong conviction of their utility.

H. C.

#### BURN YOUR COTTON STALKS.

From the Edgefield Advertiser.

Mr. Editor—I am one of those who believe that it is the indispensable duty of every man, especially those who call themselves planters, to communicate to the public information, no matter how trivial, that will in the smallest degree promote the interest of the farmers generally. There is no planter in the state, I venture to say, who has paid that attention to his farm that is obligatory upon him, but can give valuable information upon almost every subject connected with the cultivation of the soil. In view of the above obligation, I have concluded to call the attention of farmers to one fact, which perhaps will be more beneficial in cultivating a crop, than one would anticipate, from so small a matter as burning cotton stalks. The hard times, Mr. Editor, have caused me to reflect very seriously, upon the failure of another cotton crop. Should that be the case, ruin must fall upon every class of the community. Well, in order to enable me the more perfectly to succeed in a crop of cotton, I set about to examine every old stump, tree, &c., in my cotton field, to find out, if possible, what had become of the worm or caterpillar that was so very destructive to our cotton the last year. I proceeded to examine one by one very closely, but made no discovery, in passing through the field with my knife in hand, (as usual with farmers,) whittling every little splinter, until I exhausted every thing in the shape of wood. I then fell upon the cotton stalks, where, to my surprise, the first part of a stalk I cut up, I found six caterpillars snugly

housed in the pith of the stalk. This discovery led me to an examination of at least some fifty or more stalks, when to my astonishment I found the worm, some eight or ten in every stalk, and nearly all alive. My plan is, to destroy these *lovers of cotton* immediately, and the only effectual mode that I know of, is to *burn the stalks*. You should set about it immediately, say the first rain, pulling up your stalks to be burnt, before the caterpillar should eat itself out, in the shape of a butterfly perhaps, or some other insect, ready to deposite its eggs as soon as your cotton should begin to form squares or balls. By adopting the above plan, thousands and tens of thousands may be destroyed, which will remove entirely, in my opinion, the greatest difficulty in making a crop of cotton. But, perhaps, some farmers may conclude, that as planters generally plant corn after cotton, it will make no material difference as to burning the stalks. But stop; let me ask you if you are certain that the chinch bug is not a production of this very caterpillar; and besides that, many farmers, notwithstanding they adopt the rotation plan of farming, are necessarily compelled to plant some cotton in the same field twice, and perhaps thrice in succession? You will excuse the dress, Mr. Editor, in which this article appears, as my object is simply to elicit a degree of attention to this matter, and to draw forth from those more experienced than myself, information which will elevate the science of agriculture to a station which it deserves.

A YOUNG PLANTER.

#### FRUIT TREES.

From the Farmers' Cabinet.

The propagation and cultivation of fruit trees is a most pleasant and agreeable occupation for the sons and daughters of farmers; and those who have been educated in industrious habits, and those into whose minds sound moral principles have been instilled, are invariably fond of it. Every family, who occupy a lot or a farm, should annually devote a small portion of time and attention to this interesting and profitable department of rural occupation; for, we are all fond of good apples, pears, peaches, plums, quinces, and cherries, and all should lend their aid in their production; but never plant inferior kinds of fruit-trees: the same expense, time, care, and room are required as for the finest varieties, which are tenfold more valuable.

The roots of trees being designed not only to sustain them in a proper position, but to furnish them with nutriment, care should be taken, in planting, to loosen the earth for a considerable distance around them. Those who try how small a hole will accommodate the roots of a tree, miss their aim, for experiment has shown, that a tree planted in a hole three feet in diameter, will grow as much in five years, as one planted in a small hole will in ten; and the reason is obvious, for in the one case the fibres of the roots can extend and collect food without obstruction, while in the other the supply is very limited, or cut off.

Miller says, "the roots of trees are often buried too deep in the ground, which, in a cold or moist soil, is one of the greatest disadvantages that can attend fruit trees; for the sap in the branches, being by the warmth of the air put strongly into

motion early in the spring, is exhausted in nourishing the blossoms, and a part of it is perspired through the wood branches so that its strength is lost, before the warmth can reach the roots, to put them into an equal motion in search of fresh nourishment, to supply the expenses of the branches, for want of which the blossoms fall off and decay."

After the best kinds of trees have been procured, and skillfully and properly planted, great care should be taken to protect them from the depredations of cattle, and they should be staked, to keep them in an upright position, for there is no way in which the indulgence and want of taste of a farmer is more prominently and permanently exhibited, than in the *inclined* position of his fruit trees. What think you, neighbour, of a man who has suffered a fine apple or pear tree to grow at an angle of forty-five degrees, when, if it had claimed attention at the proper time, five minutes' work would have given it perpendicularity, and preserved its beauty; and it would then have occupied much less space.

On every farm, a small space should be allotted for the purpose of raising stocks of the different kinds of fruit trees, so that buds or grafts could be inserted at the proper seasons of performing these operations, and in this way a perpetual succession of the finest trees would be obtained. The nursery for this purpose should be kept entirely free from weeds, otherwise all will be hopeless, for weeds have been proven, by several of my lazy acquaintance, to grow much faster than young fruit trees raised from the seed. The quince is among the most profitable of our fruits, always finding a ready market at a generous price, and yet there is but little attention given to its cultivation: it succeeds best in a moist soil, and will grow readily from slips inserted in the ground, early in the spring. The *young* trees produce the finest, fairest fruit; there should, therefore, be a succession kept up, as they do not do well at a greater age than ten or twelve years. It is hoped that the approaching spring will not be permitted to pass by without a large addition being made to the number of quince trees in our country. Those who are too remote from market to profit by the sale of them in a green state, will find their interest promoted by drying them, when they will sell for a higher price than the best dried peaches.

Those who plant young orchards would do well to consider maturely what description of cultivated crops would be most beneficial to the trees, and particularly to avoid such as are known to be injurious. What would be the effect of a luxuriant crop of wheat or rye, is well known. The trees are stunted and injured in their growth, or they are smothered and killed outright. Will a wise man sow a young orchard with rye? I say no, never.

AGRICOLA.

#### GOOD WORK.

From the Agriculturist.

From a statement left at this office by Dr. John Waters, of Nashville, we learn that fifty-five of his hands, on his plantation in Arkansas, picked in the latter part of the month of December 34,615 lbs. of cotton in one week. The week following the success was as good, till the snow prevented the progress.

[This was on an average of 629 lbs. per week, or 115 lbs. per day, for each hand. Good winter work!—E.D. F. R.]

#### TO PREVENT RATS FROM CUTTING HOLES THROUGH FLOORS AND DOORS.

A correspondent in the *New England Farmer* says, "hot and strong tobacco juice poured on the places where rats are at work, will stop their depredations."

#### AGRICULTURAL SOCIETY.

From the *Cheraw Gazette*.

The anniversary meeting of the Pee Dee Agricultural Society will be held in the Town Hall at Cheraw, on Monday the 22nd inst. at 10 o'clock A. M. At 12 o'clock the meeting will adjourn to the Female Academy, where the anniversary oration will be delivered, after which the following premiums will be awarded.

For the greatest production of cotton, on three acres of up-land, the product to be not less than 12,00 lbs. a silver cup of the value of \$30,00

For the greatest production of cotton on three acres of low grounds, the product to be not less than 18,00 lbs. per acre, a silver cup of the value of \$30,00

For the greatest production of corn on three acres of upland, the product to be not less than 40 bushels per acre, a silver cup of the value of \$30,00

For the greatest production of corn on three acres of low grounds the product to be not less than sixty bushels per acre a silver cup of the value of \$30,00

For the greatest production of wheat on one acre, the product to be not less than twenty-five bushels, a silver cup of the value of \$10,00

For the greatest production of turnips on half an acre the product to be not less than 400 bushels per acre, a silver cup of the value of \$10,00

For the greatest production of sweet potatoes, on one acre, the product to be not less than 300 bushels per acre a silver cup of the value of \$10,00

For the experiment best calculated to test the profits of silk culture, the product to be not less than 80 lbs. of reeled silk, a silver cup of the value of \$10,00

For the greatest production of carrots on the fourth of an acre, the product to be not less than 400 bushels per acre, a silver cup of the value of \$5,00

For the greatest production of sugar beets on the fourth of an acre, the product to be not less than 400 bushels per acre \$5,00

J. W. BLAKENEY.  
Secretary.

Cheraw, February 6th, 1841.

## ECONOMY IN CANDLES.

If you are without a rushlight, and would burn a candle all night, unless you use the following precaution, it is ten to one an ordinary candle will gutter away in an hour or two, sometimes to the endangering the safety of the house. This may be avoided by placing as much common salt, finely powdered, as will reach from the tallow to the bottom of the black part of the wick of a partly burnt candle, when, if the same be lit, it will burn very slowly, yielding sufficient light for a bedchamber; the salt will gradually sink as the tallow is consumed, the melted tallow being drawn through the salt, and consumed in the wick.—*Economist*.

## A CHEMICAL AND GEOLOGICAL ACCOUNT OF THE SHOCCO SPRINGS.

For the Farmers' Register.

The following account of a spring, once in high repute and still the favorite resort of the *élite* of North Carolina, will, it is presumed, possess sufficient interest to justify its publication. This spring is situated in Warren county, North Carolina, and is the source of one of the minor tributaries of Tar River. It rises in a talco-micaceous slate, belonging to a class of rocks generally considered *primary*, and hence referred to an *igneous* origin. It is however contended, by a modern school of geologists, that this class of formations was originally deposited from water, and subsequently altered by heat, they are hence called *metamorphic* rocks. Of the truth of this theory, triumphant proof is afforded by the band of rocks in which this spring originates, as the alteration may be traced by slight gradations, from a condition in which the rocks retain unequivocal proofs of their *aqueous* origin, to one in which these characters have been entirely effaced and destroyed by igneous action, and so much disguised by it, and made so intimately to resemble rocks of igneous origin, that they would be unhesitatingly referred to this class of formations, were it not possible to trace their history by the characters, above mentioned. Additional confirmation of the oceanic origin of these rocks is afforded by the saline ingredients of this spring—ingredients of course derived from saline impregnation in the rocks, which could alone have derived them from the ocean, the only known source of them. I believe this is the first published account of a spring of this composition rising in rocks of this character. Similar ingredients are common in springs rising in formations known to be of oceanic origin. The Bath water, quoted below, contains similar ingredients; but this water rises in a formation abounding in marine remains, which sufficiently attest its marine origin. The Shocco spring, belongs to the class of *sulphuretted* waters, as, in addition to the solid ingredients mentioned below, it contains *sulphuretted hydrogen*; which, though not evolved in sufficient quantity to be perceptible to the eye, is evident, both to the taste and smell, and was proved to be present by chemical tests. From the want of the requisite apparatus at the springs, the amount of sulphuretted hydrogen could not be ascertained, and owing to its gaseous nature could

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not be preserved for analysis elsewhere. The spring is generally free from deposit of every kind; in one instance alone, was a small deposit of the white hydrate of sulphur detected, possessing the usual singular arborescent form, which, it is said by Professor Daubeny of Oxford, is caused by its being deposited upon a peculiar vegetable fungiferous substance, to which he gives the name of *glairine*.

## Shocco.

1 gallon of water contains of	
Muriate of soda	7.234 grs.
Sulphate of soda	1.041 "
Sulphate of lime	51.370 "
Carbonate of lime*	5.555 "
Muriate of alumina a trace.	
Phosphate of alumina a trace.	
† Total,	68.200 "
Temp. Sept. 6th, 1840. 59 degrees.	

## Bath.

1 pint of water contains of	
Carbonate of lime	0.8 grs.
Sulphate of soda	1.4 "
Sulphate of lime	9.3 "
Muriate of soda	8.4 "
Silica	0.2 "
Oxide of iron a trace.	
Total,	15.1 "

To show the close resemblance in composition of this spring to the Bath water, (England,) so celebrated for its medicinal virtues, the analysis of the latter by the celebrated Phillips, is annexed. The forthcoming work of my friend, Professor Wm. B. Rogers, on the Virginia Springs, will afford a comparison with the springs of that state. Experience has proved this water to be a stimulant tonic. Aperient, cathartic, diuretic, diaphoretic, emmenagogue and alterative. Most of these properties would naturally be expected from the respective medical qualities of the different ingredients contained in the water. Some of the enumerated properties cannot be thus accounted for. This, however, is by no means rare, as mineral waters frequently possess medical properties which cannot be referred to either of the contained ingredients, and which do not belong to the artificial mixture of them; although the imitation may accurately represent the natural compound, both in the nature and relative amount of the ingredients. It is this which renders natural waters so much more efficacious than the artificial imitations of them. To be convinced of the medical value of this water it is only necessary to remember how large a class of chronic diseases originates in the derangement of those organs, whose functions would be controlled and regulated by an agent possessed of the above-mentioned properties. The curative virtues of this water will, perhaps, be most happily exercised upon those inhabitants of malarial districts, suffering from a derangement of the alvial secretions, functional affections of the alimentary canal, deranged depu-

\* The stratum from which the spring issues was found to contain a very appreciable amount of lime in the form of a silicate. The existence of lime in the soil may hence be inferred.

† When the water was taken for analysis, the spring was swollen by rain—hence the amount of solid matter mentioned in the analysis as corresponding to 1 gallon, is probably less than the average quantity.

‡ Derived from the sulphurated hydrogen.

ration of the skin, and the train of diseases which malaria rarely fails to inflict upon its victims. Those who have retreated to Shocco from the pestilential marshes of the seaboard, hoping to escape their old enemy, should they be still haunted by the "marsh fiend," may safely hope to exorcise him by a free use of the Shocco water.

C. B. HAYDEN.

Smithfield, January 10th, 1840.

#### LIVE STOCK.—DURHAM, AYRSHIRE AND NATIVE BREEDS OF CATTLE.

Extracts from the Proceedings of the Fifth Agricultural Meeting in Boston, Feb. 7, 1841.

*Reported by the Rev. Henry Colman, Agricultural Commissioner of Massachusetts.*

Mr. Sheldon deemed it important that oxen should be broken when quite young; and too much care could not be taken in their early training. Boys may injure steers, if entrusted with the management of them. There are some boys, however, who may be confided in, and their management then is sometimes better than that of grown persons. That which we learn in youth is likely to be retained. This rule applies as well to cattle as to men. Cattle, broken when young, are likewise more able to endure hardships than the later trained.

Oxen should be trained well to back. The best way of teaching steers to back is to slap them with the hands upon their noses. Goads should not be used. Some persons in attempts to induce them to back strike them with their goads upon their forelegs, which is as likely to induce them to jump forward as to back—they may be more easily taught to back by touching than by beating them.

In regard to driving, drivers are not sufficiently careful as to the language which they use. They should not use language without meaning. They often talk to their teams in a language which they cannot themselves understand; and the oxen of course can know nothing about it. He insists that the language adopted in such case is of much importance. He knew a deaf and dumb person who could manage one yoke of oxen well, but could not drive three yokes. If we are careful to say only what we mean, and accustom them to mind when they are spoken to, much will be gained.

He saw twenty-four yokes of cattle attached to a building, but they could not start it. There was a particular driver among the men, who was accustomed to use only one word, and that was, "Come." If an ox did not know what it meant, he would make him know. This man took charge and ordered the teamsters to stand by their own cattle, and to make no movement until he gave the order, "Come." As soon as the order was given all brought their whips down together, and started at once. One man remarked, that whenever this teamster said "come," he was afraid his oxen would split their yoke. The oxen understood perfectly, that if they did not start at this signal, the whip would be felt. If they were thus taught to obey, the cattle would get on much better.

There is a good deal in the management of horses, but something may be determined from their looks. He thought there was more risk of being deceived in horses than in men. Men are themselves often deceived in regard to their own horses and cattle, from a habit of thinking that what belongs to themselves, and that to which they are most accustomed, must be best; when, if they belonged to another person, a different judgment would be formed.

He remarked that if a horse "hollows in" from his nose to the top of his head, he would be found ambitious and excitable. A fractious man would make such a horse obstinate and ill-tempered. Some of the best horses toe out and are apt to hit the foot against the ankle. This indicates a quick traveller. The nearer the feet were together under a horse, so that his weight is brought nearer to a point, the more easily he will travel. The best travelling horses are short from the foot lock to the gambel, and long from the gambel to the saddle.

Mr. Fay of New-Braintree inquired whether, when steers were first yoked, they should be hitched to oxen or yoked alone?

Mr. Sheldon thought it might sometimes be well to hitch them to oxen. He knew one man who always yoked his steers in the barn, and then tied them up in stanchions, to accustom them to the yoke. It was well to let them wear the yoke in the yard. Great care must be taken not to frighten them; to avoid hurting them; and not to use the whip.

Mr. Welles Lathrop of South-Hadley was then kind enough to give the meeting an account of his valuable stock.

Mr. Lathrop would confine his remarks to the subject of cattle, and to a race of animals with which he considered himself somewhat acquainted. Of the Ayrshire stock he had owned some animals, but none which were full-bred. He thought them valuable for New-England, for our light soils and short pastures. A small animal is preferable to a large one. They may get as much feed as a large one, but will be kept in better condition. He had heard of a small and hardy race of horses on the island of Nantucket, that were left to take care of themselves until four or five years old; a large race of horses could not subsist there.

Mr. Lathrop proceeded to say that Mr. Jaques had effected most valuable improvements. His success had been great: and his stock was of a superior character. He is of opinion, however, that his success would have been better if he had taken for the foundation of his stock, instead of a native, an improved Durham cow.

The improved Durham short horn stock, was that which he had adopted, and he highly estimated them. Mr. Charles Collings of England may be considered, in a measure, the founder of this stock. Mr. Collings had long been in possession of the Teeswater breed of cattle, and had made great improvements in the race. From an animal of this breed, crossed with a Galloway cow, he produced a stock which has been unrivalled in the public estimation. This is evident, from the prices paid for them at Charles Collings's sale—when forty-eight animals produced £7115 sterling, averaging more than £148 sterling, or \$650 each. This sale had a decisive ef-

fect upon public opinion, as to the value of this stock, and brought them into high repute.

It was the aim of Mr. Collings to reduce the size of the original race of animals from which he bred; and to render them more compact. It is not safe to breed from too close affinities, unless done with great care. If pursued too far, it produces a cavity and deformity between the shoulders. Many breeders have aimed, not so much at good points in the animal, as the increase of the size. The best breeders seek to render the animal compact and close. There is no animal perfect; it is only an approach to perfection that we can make. If an animal in form be too long or too short, she should be crossed with one having opposite properties.

Earl Spencer, one of the most distinguished breeders of improved short horns, says the male animal should approach to coarseness, the neck be thick, and that he should handle well. These facts are established respecting this race of animals,—that they come early to maturity, and that at two or three years old they will make greater weight than any others known.

The color of the pure race is red or white, or red and white mixed. So far as his experience goes, any black or blue tints indicate an impurity of blood. The improvement or formation of this race of animals has been the work of half a century. The progeny will partake of the properties of the sire, or dam, or jointly of both. Some families of the short horns are deep and rich milkers; others have a strong tendency to thrift and fat. The former seem better adapted to our situation; the latter, more suitable for the west. The beef is good; and those portions which are of little value, are of light weight. For milking and dairy properties, he is of opinion that this race can be relied upon. He did not come prepared for detail, but he would refer to two or three cases which had come to his knowledge. A cow, of this breed, owned in Delaware, had given thirty-five quarts of milk per day. Another, owned in Pennsylvania, had given thirty-three and a half quarts of milk per day. The Messrs. Lathrop, themselves, own two cows, one of which gave forty-eight pounds, the other, forty-five pounds of milk per day, for ninety days in succession. Another cow, raised by the late Mr. Williams of Northboro', and now owned by Messrs. Lathrop, upon grass only, had given twenty-eight quarts per day. They had nineteen of these animals on their farm, at South-Hadley, which were Herd-book animals. They had ten more which were high-bred. They had two heifers, which were two years old last spring, and another, two years old last autumn—which weighed 1200 lbs; 1175 lbs; 1065 lbs, on 7th October last. They were so compact and snug-built, that good judges of cattle estimated them at no more than three-fourths of their actual weight. The dams were all deep milkers; and he had sent these three heifers to Philadelphia, to a bull bought of Mr. Bates, a principle improver of the race. This bull was imported by Mr. Joseph Cope, of West-Chester, Pennsylvania, and cost, in England, one hundred guineas, at one year old. Mr. Bates bred with great judgment, and produced animals of great weight. Two animals, imported from his stock, by Mr. Vail of Albany, cost \$700 each. The Messrs. Lathrop

had two cows, whose dams were sired by Comet.

Mr. Dodge of Hamilton inquired whether a native cow, crossed by a Durham bull, would not produce a calf so large as to suffer in parturition. He had seen this statement. The fact had occurred on his own farm.

Mr. Lathrop answered, that the principal breeders are of the opinion that the progeny takes after the sire, more than after the dam. He had never seen a thorough-bred animal, without perceiving that he partook strongly of the character of the sire. An improved Durham bull will mark his stock strongly. He was not able to answer further than this.

Mr. Dodge was anxious, farther, to ascertain whether the Durham cows give more milk than others, and would yield more dairy produce?

Mr. Buckminster remarked, that England had been sixty years engaged in improving her stock, and we had seen to what point she had carried these improvements. They had doubled the average weight of their cattle, which were sent to market. The important question now is, whether our animals are superior to theirs? Are our native stock better than any which we have imported? He would be glad to have the imported stock, if it is better than that which we have. If our animals are not surpassed, can we gain any thing by importation?

He is of opinion that the English have erred in attempting too much to increase the size. It should be our plan to breed a small race. The middle sized animals are the most profitable for us. The late Gov. Gore introduced a large bull into the country. His descendants are still to be found. Some of the cows died in calving. If the bull is not more than one year old, the calf is not likely to be too large. If the bull should be seven or eight years old, a small cow would suffer. Col. Jaques had chosen a native cow as the foundation of his improvement; and, in his opinion, had accomplished much. He is of the opinion that the cows near London do not give so great a produce as the cows near Boston. (This we believe is an error. The cows in the London dairies, while in milk, average ten quarts; with us not six.—Reporter.)

Mr. Paoli Lathrop remarked that, if the bull be a coarse animal, and large when a calf, his calves will be large and coarse. The true Durham bull will produce small calves, weighing from sixty to eighty pounds. His cows, on the same keep, produced a quarter more than other cows, which he had previously owned. A cow which he had from John Welles, Esq., of Dorchester, filled at a milking a twelve-quart pail. He had a calf which, when dropped, weighed sixty-five pounds, and on the day when it was one year old, one thousand and twenty pounds. The calf run with the cow through the season. The cow was kept on coarse hay. A cow kept by Gov. Lincoln required two pails to receive all her milk at a milking. If the bull be fine, the calves will be good; if otherwise, coarse.

Mr. Dodge of Wenham had his bull from Poor's Indian-Hill Farm, at West-Newbury. He was large when a calf, weighing 121 pounds at his birth. He inquired whether large cows produce more milk than small ones? He observed that the cows belonging to the milkmen, who supply the cities with milk, are in general large.



The milkmen select those which give most milk.

Mr. Sheldon of Wilmington observed that for years he had bred some of the Durham stock. He had crossed his stock with Cœlebs, and had half-bloods. The calves were larger than from native bulls. The farmers who are seeking the improvement of their stock, are more careful and liberal in keeping them. Respecting the question of Mr. Dodge, he said that large cows, when full-fed, give more milk than small cows; but when the pastures become dry, they sooner fall away. One reason why the cows owned by milkmen are generally larger than others, is, that they are kept better. Milkmen like to buy two-years old heifers, and the liberal keeping promotes their growth.

Mr. Wild of Sturbridge remarked that large cows would produce more value than small ones, if the keeping be sufficient. If you feed tight, a small breed is to be preferred; but you will get more milk from large cows, because they eat more. If not better in quality, it will be more in quantity. In respect to training cattle, he would by all means train them early. If taken after more than a year old, the difficulty of breaking them would be increased. They must not be whipped. If you have well-managed boys, they may be trusted with the breaking of steers, but not otherwise. If steers have arrived at two or three years old, and farmers then put a yoke upon them and let them run, they can never be tamed afterwards. We must not insist upon steers being old oxen. Cattle never get over early mismanagement. In respect to driving cattle, he objects to much talking.

Mr. Jaques remarked that the progeny of an animal depends on his form or shape. Cœlebs weighed 2290 pounds. A heifer calf was brought to this bull weighing 300 pounds; but she experienced no difficulty in bringing forth a calf. If the bull has finely tapered limbs, the calf will be good; if his limbs are large and coarse, the character of the calf will correspond—have large limbs, and a coarse body. We have had very few of the genuine Durham short-horns in New England. Many of the animals which we have received, as specimens, are as fair samples as it would be of our horses, to send them a five-dollar horse. They would not deem him fit to give to their hounds.

The true Durhams have broad bosoms, round ribs, flat backs. Our cows appear to have lost a rib. He likes the Durhams and the Herefords, but we must have animals suited to our soil and climate. He thinks the farmers should seek animals of a medium size. The Durham short-horns are preferred for the London dairies. (The best cows in the London milk-houses are a cross with the Holderness.—*Reporter*.) The bull Bolivar was a beautiful animal. But Mr. Jaques had produced a stock which yielded as much cream as any one. On light soils, the Ayrshire stock will do well. Mr. Cushing of Watertown is entitled to the highest credit, for his introduction of this stock. With his customary liberality, he has given away twenty-two of these animals. In New England, we must have cows which will produce the most milk, butter and cheese. Mr. Jaques related a story, which he said rested upon good authority, of a Durham cow, tied near London, with a little girl by her side, to sell the milk as it was drawn, in pints, half-pints, &c., and

that in one day her sales amounted to forty-two quarts. He had seen many good native cows, but we could never be sure of their calves. This had been demonstrated, in respect to several very extraordinary animals exhibited at Brighton. The only way to secure a race is to keep the blood pure. The Durhams strongly marked their calves the stronger the strains of blood, the more certainly we secure the character of the stock. We may, with skill in the selection, affect the color at our pleasure, and by the seventh or ninth generation, accomplish our object. We shall never see a black hair or a black nose on a pure Durham. (It is believed there are exceptions to this remark.) A good breeder, when he gets a second cross, goes back, in order to secure the blood. The flesh of an animal must have an elastic touch, like that of a healthy man, and not like that of a swelled limb, which, when you press it, the indentation remains.

Mr. Colman had not intended to enter upon this discussion, but he felt it due to his official relation to the farmers of Massachusetts, to say that he had had the pleasure of seeing the improved Durham stock of the Messrs. Lathrops of South-Hadley, and he thought them eminently beautiful, and evincing great skill and care in their management, on the part of those gentlemen. He had seen many of the imported animals throughout the country; and one of the herds imported for the Ohio Company, which he saw on their way, was truly splendid, and in beauty and perfection of form, far surpassed any thing which he had ever witnessed.

He must, however, in justice add, that he yet wanted the proof of the Durham short horns being the best stock for our dairies. Seven of the race which he had owned, some full and others half-blood, had been inferior as milkers. The quantity of milk given by many of the animals which he had seen was remarkable; the quality, in general, inferior; though he had found some exceptions to this remark; but these exceptions, he believed, were accidental.

The Cheshire farmers, who were as distinguished as any in the country or in any country for the produce of their cheese dairies, preferred the native stock. From a dairy of eighteen cows, an average of 633 pounds new milk cheese to a cow, in a year, had been obtained. He had challenged in writing and conversation the owners of the short horns in the country to prove by actual experiment the dairy properties of this stock; and he would furnish a list of a hundred cows of our native stock, which had made from twelve to fourteen pounds of butter per week, through the season. He was far from having any prejudices against the improved Durhams. He was an enthusiastic admirer of them; but he wanted their dairy properties tested by actual experiment. A very distinguished English farmer, Mr. Shirrer, who had made the tour of this country, expressed his regret at their introduction, and pronounced them in his book the poorest dairy stock in England. We could not be said to have formed any distinct race among ourselves, excepting the trials made by Mr. Jaques, and a long-continued improvement carried on in reference to milk cows, in another part of the state, upon which he had reported. Much, undoubtedly, yet remains to be done, but nothing in this respect can be effected

but by skill, extreme accuracy of observation, and long perseverance.

He thought the Durhams not well adapted to the scanty pastures and negligent habits of many of our farmers. All high bred animals require particular care and the most liberal feed. Two of the finest oxen ever raised in the country were of this stock. One, it is believed, a full blood, from Greenland, N. H., weighing over 3400 pounds live weight; and one a half-blood, raised in Claremont, N. H., and sent year before last to England, for exhibition. His live weight was said to be 3700 pounds; and he was pronounced in England, by the best judges of stock, as unrivalled for weight and thrift, and eminently well-formed.

The best breeds would soon run out if negligently or severely treated. This race were undoubtedly well suited to the rich pastures and abundant products of the west, of Kentucky and Ohio. There they would flourish. What might be done for our own stock by more liberal keeping, was yet to be seen. He had known a calf from a native cow, at four months old, to weigh nearly 400 pounds; and another, at five months old, to weigh 600 pounds. If the improved Durham stock should prove the best for us, and he kept his mind on this subject open to conviction, we could at once avail ourselves of the distinguished improvements of half a century's skill, and toil, and expense, so liberally bestowed in England. At any rate, the improvements which they had accomplished in England, so obvious and impressive to the most careless observer, read a most important lesson to us, and showed what might be done by skill and care, by judicious selection, by steady perseverance in a regular system, and by liberal keeping; and presented, at the same time, the most powerful motives to exertion and enterprise in a branch of husbandry acknowledged by all to be of the first importance.

**THE SIXTH AGRICULTURAL MEETING.—HOGS, HORSES, SHEEP, AND CATTLE.**

*February 18th, 1841.*

Mr. Colman, [the agricultural commissioner,] stated—Of swine, there were various breeds now well known among us, and within the last forty years the most valuable improvements had been made in this race of animals. Twenty years ago, a distinguished packer of beef and pork, in this vicinity, said, that the improvements which had then taken place in this stock were worth hundreds of thousands of dollars to Massachusetts. These improvements have consisted in introducing in the place of a long, gaunt, hungry species, a compact, small-boned, thrifty, good humored kind, who were kept at a comparatively small expense; and made large returns for the amount of food which they consumed.

These improvements had been effected mainly by a cross with the Chinese breed; but this was not well ascertained. The introduction of the Byefield breed was perfectly within his own recollection. He had a relative living in Byefield, a parish of Newbury, who attended, as a butcher, the Newburyport market. He found in the market, a woman, with two remarkable pigs for sale, which he immediately purchased and carried to

his farm. He did not know the history of these pigs, but this laid the foundation of what is called the Byefield breed, known as such in this country and in England; and which proved a most excellent cross with the best of our native swine.—They were remarkable for their thrift, their early maturity, their good humor, and the cheapness with which they were kept. This was the first important step in the improvement of the breed. This occurred about the year 1792.

The next improved breed of swine introduced into the country was the Bedford. It is understood that some of this breed, which had acquired much celebrity in England, were sent a present to General Washington; and the person by whom they were sent betrayed his trust, and sold them, or their progeny, for his own benefit.

The Mackay, another improved breed, was introduced by Mr. Mackay, who commanded a packet between Boston and Liverpool, or Boston and London; and, having a taste for agricultural pursuits, he selected abroad some of the best stock he could find, and placed them on his farm at Weston, from which many valuable animals have been obtained, and are scattered in different parts of the state. They are a breed remarkable for their thriftiness and plumpness, and for their great weight.

The next valuable breed known among us is the Mocho, a white hog, of excellent thriving properties; but where he originated is not known. Mr. Colman had found this breed in the western and south-eastern parts of the state, in the centre of the state likewise, and in western New York; but was not able to trace their genealogy. The cross with this hog has produced an excellent stock.

The next valuable stock introduced among us is the Berkshire. The pure Berkshire, it is believed, were first introduced into the country by Mr. Hawkes, an English farmer, who came over and settled near Albany. He brought many valuable animals with him; but for some reasons, having given up his establishment, his stock passed into the hands of a very enterprising farmer, Mr. Caleb N. Bement, by whom they were propagated, and have now been widely extended over the country. Mr. Colman remarked that the change which had taken place in the hogs of Albany, which are allowed to run at large in the streets, since the introduction of the Berkshire, was most remarkable; instead of a lean, hungry, prowling, noisy race, objects of universal disgust and dread, there were now every where to be seen in the streets and sties of that city, fine sleek and plump pigs, which appeared to be kept with the greatest care and liberality.

The Berkshire breed, however, were thought by many persons to want size; and a cross of the Berkshire with the Mackay has produced the finest and most thrifty race of animals that had ever come under his (Mr. Colman's) notice. This stock, of the very finest description, might now be seen in perfection, at the place of Mr. Phinney, Lexington, and of Mr. Cushing at Watertown. Finer animals than were here to be found, in Mr. Colman's opinion, could not be found any where. The Mocho breed had likewise been crossed with the Berkshire; and intermediate crosses of the Berkshire, with the Mocho and Mackay together had been equally fortunate.\*

\* E. Phinney, Esq., of Lexington, has just graduated

The Chinese breed had likewise been repeatedly introduced into the country directly from China. Mr. Cushing, of Watertown, had now some animals of the pure blood. The pure-blood stock was not large enough for our purposes; but the cross with this breed had always been advantageous; and Mr. Colman believed the Chinese breed to be the foundation of the best improvements in this country and in England.

Mr. Colman considered the fattening of pork of great importance to New England. We could not raise pigs in this vicinity to advantage; certainly not to the same advantage as where pasturing is cheap, and the wash of the dairy abundant; but they might be raised with much profit in the interior, and fattened here. Mr. Colman was satisfied, from considerable experience, that when corn is seventy cents a bushel, and pork will bring in the market six cents a pound, or six dollars per hundred, pork may be fattened to a profit. Hogs are particularly valuable to the farmer, on account of the large amount of manure which they may be made to furnish. If well supplied with the raw material, a hog may be expected to produce ten loads of good compost manure per year.

Mr. Colman expressed his unwillingness to go further in the discussion; his only object being to introduce the subject to the meeting; and he should therefore cheerfully leave the field to others.

Mr. Jaques now proceeded to speak of the points to be regarded in the selection of a horse. In choosing a horse for a roadster or traveller, he wished to have a light head neatly put on; the neck rising promptly and strong from the shoulders and withers; the neck somewhat crowning or curving on the top and tapering towards the head, with a strong crest. The shoulders should be well laid in, spreading well back, somewhat like a shoulder of mutton. He would have the chest deep and slightly projecting; the withers rising moderately high, and inclining well into the back.

If the withers are low and flat on the top, the horse will be inclined to plunge to the ground; and when fatigued will stumble or fall. But the withers must not rise too high, as he will then appear as though on stilts. Either extreme is an impediment to free and safe action. He should have ribs rounding well out; back short, straight and well coupled, that is, the hips thrown forward, forming a strong loin, and a long lever from the point of the hip to the hock joint of the hind leg. The horse should be of good length from the point of the shoulder to the extreme of the buttock. He should have a strong and bushy dock, and be close and snug under the dock; for if he be large and loose there, he will be apt to scour and be fit only for a door-yard horse. He should be full in the twist, that is, the inner part of the thighs should be well shut together. The head, neck, and body form a lever, resting on the forelegs as a fulcrum; the head being at the end of the lever. If the neck be very long and the head heavy, or the neck quite short and light, either extreme will impede his action. The whole of the machine should be well-proportioned. Much depends on the shoulders being well-placed. The length and size of the fore-arm, is a very important point. He must have a full muscle on the arm, and the shank-bone, below the knee, should be short, broad and flat. When the rider is mounted, he should be thrown back upon the haunches of the horse. The legs should be clean and free from blemish; and when in motion move true, and free from cutting or "wabbling." The feet should be round and steep; the heels broad; the coronet and pasterns of medium length. Mr. Jaques wishes to see distinctly the cords in the limbs. The knee should be large and well-dropped down; the arm above the knee long, and the muscles large and full. The tops of the shoulders, where matched to the withers, should not be so heavily loaded with muscle as to impede their action. He does not object to have the fore-feet move closely to each other; but not so as to interfere. Much depends on the form of the hind leg and the power of the lever, as regards *strength* and *speed*. The shank, hock and thigh should be broad and flat, resembling that of an ox; if so, when in motion they will operate like a plank sprung edgewise and then let fly. He has no objection when the horse is at good speed, to have the hind legs open and spread a little, if there is a free action in the hock-joint. The necks of many horses appear to be wrong side up. He would choose to have him fifteen and a half hands high, and to weigh a thousand pounds.

He went on to say that he considered nothing more valuable than a good cow, which would give eighteen quarts of milk per day, and fourteen pounds of butter per week. He thought it necessary to establish a breed for New England. He deemed it important to import foreign stock, of established blood. Fine individual cows among us, which produce much milk and butter, are often the progeny of a mean stock, and there is therefore no certainty of perpetuating their good qualities. Farmers pay little attention to the character of their bulls, and are always ready to sell their best calves to the butcher.

Mr. Jaques had not had an extensive experience with swine. He disapproved of the system of breeding in and in; and yet there were facts in relation to this matter, which strongly conflicted with the general theories.

He spoke, again, with much emphasis, of the value of sheep; and especially of the adaptiveness of the South Down to our wants. His own flock was excellent. Their average yield of wool was four pounds to a fleece. He had one wether, which standing, weighed 219 pounds, and for the meat of which he received twenty dollars.

Mr. French of Braintree inquires of Mr. Jaques how much milk his cows would average per day?

Mr. Jaques has made no record of this. His object has been to raise stock, and not quantity of milk. Some of his cows now give twelve quarts per day. The greatest quantity he has ever obtained is twenty-one quarts per day. He can produce a flush of milk by corn and roots; but it has been his object to raise his stock upon grass and hay, so that when sold, they might thrive upon other keeping, and not fall away. It is often said that the keep determines the quantity of milk. Milkmen can answer this question.

Mr. Cole remarked, that much had been said upon breeding stock, but no great principles had

from his Porcellian Seminary fifteen hogs, whose average weight was 531 lbs. One of them weighed 728 lbs. As things go, they were every one of them entitled to a doctor's diploma.

been established. Two principles have been assumed. The first, that like produces like. This applies to vegetables, also. This is likely to happen. But it requires many generations to fix this matter, and to render it sure that the ancestor shall transmit his qualities to his offspring.

If a farmer plants only one kind of corn, and studiously avoids any mixture, he may preserve it pure, but if different kinds have been intermixed, it will take some time to recover the original, or to separate one kind from another. He had had a colored corn intermixed with his crop, and it required five years to work out the colored.

He believed that with breeding animals, the imagination has considerable influence. For twenty or thirty years, he had occasionally black sheep in his flock. This he believed was the effect of imagination on the breeding animals. There was an influence on the progeny, from both male and female. It is said a superior male has most influence. This was probably the case with full bred animals, because their prominent properties had been fixed by a long succession. In Arabia, the offspring, it is said, follow the female side, because there the mares are always objects of the most exact care and attention. As a general thing, it could not be determined which side would most strongly mark its progeny. It was different with blood-stock, or high bred animals.

Another principle, having a material influence, had not been named. Which animal would determine the sex of the progeny? He believed it would be found that the most vigorous would settle this matter. In an experiment made to test this point, an individual had been able, by using a young and comparatively feeble ram with a flock of vigorous ewes, to produce 172 females to 100 males; and this individual had said, if others would furnish the flocks, he would produce, at pleasure, male or female. With one flock, by using very young rams, he produced 76 females to 30 males. By using a strong and vigorous ram, he produced 55 males to 30 females. He divided his flock, according to strength of females; they were between four and five years old, and he produced 25 females to 15 males. In another case, he took ewes under four years old, and put vigorous rams with them, and produced 26 males to 14 females. These were well authenticated experiments which had been made in France. From five young mares, the same individual obtained five females; and in another case, from 15 mares he obtained 13 females. It was to him (Mr. Cole) therefore evident, that the sex followed the most vigorous parent.

Another principle seemed to him well established—that the female offspring resembled the sire, the male offspring the mother. He had tried to raise good cows from heifers from good cows, but he always failed, and was at a loss for the reason, unless it were to be found in this principle. His observations in respect to the human race seemed to confirm this position. Daughters in general resemble their fathers; sons resemble their mothers. It was often said that there had been no distinguished man in society who had not had a distinguished mother; and the character of the son had been determined by her education, her moral influence or character. He was of opinion that this physical law, to which he had referred,

had always much to do in the case, as he believed facts, if carefully observed, would fully prove.

In making a cross, he thought the male should be smaller than the female. If the cross is made with large males, the offspring might suffer for want of sufficient sustenance; the animal will be restricted in his growth. Collings reduced the size of the animals, which he bred by selecting small males to cross with large cows. In this way, the Durham ox was produced, for which £2,000 sterling had been refused.

Mr. Weld of Sturbridge said that a person, in order to determine what stock he should prefer, should look to the character of his farm. In many cases, the pastures are poor, and we have nothing but meadow hay for our stock. Our pastures and meadow hay might suffice to keep sheep; and he had found sheep more profitable than other stock. The grade sheep, 3-4ths or 7-8ths blood, had been most profitable. He kept 50 or 60. He wintered them on lowland hay, and he obtained three to three and a half pounds of wool. He usually got a lamb from each ewe, and seldom lost more than one or two in a season. His lambs came about the middle of April. If a man keeps sheep for market, he would advise that the native sheep should be kept; if for the wool, he would recommend the 3-4ths Merino.

The stock already in the country was, in his opinion, adapted to our soil. We should take more pains in improving it. In general, farmers raise the calves which first come; and in this very way, sometimes make a mistake. The best calves will show the most activity. There is as much difference in animals as in men. In general, the poorest cows will calve first. He raises his calves on new milk. They should be well treated the first year; the second year, they may have poorer fodder. We may raise as good stock here as may be found in any country.

Gen. Low took occasion to add to his former remarks, that sheep were useful in destroying the white-weed in pastures; the ox-eyed daisy. He had known a field in which, in three or four years, they had completely eradicated this troublesome weed.

Col. Jaques remarked that he knew no way of determining what the sex of the future progeny should be. He himself and an able physician had been making experiments and observations in this matter for thirty years, but without deciding any thing. Males are likely to mark their offspring more strongly than females, because they are bred with more care, and there is more pure blood commonly in the male.

#### ICE MOUNTAIN OF HAMPSHIRE COUNTY, VIRGINIA.

For the Farmers' Register.

The existence of a mountain possessed of a temperature independent of all external causes, and which was so unaffected by the vicissitudes of the seasons, or the diurnal variations of temperature, as in midsummer, where exposed to the full glare of the noontide sun, to preserve a uniform temperature of 32 degrees, was too singular and striking a phenomenon not to have early attracted

observation. The Ice Mountain has hence received frequent notice, but of so indefinite and frequently exaggerated a character, as to fail to produce a general belief in its existence, or to secure for it that interest which this rare curiosity so richly merits. The Ice Mountain is one of the subordinate ridges of the Cacapon Mountains, and is a continuation of the North River Mountains. This mountain chiefly consists of a sandstone which teems with terebratulæ, productæ, spirifers, and other marine shells, the exuvial relics of the inhabitants of that primeval ocean, which once rolled over the summits of the then unborn Alleghany. At the commencement of this mountain, many miles south of the Ice Mountain, the rocks are nearly horizontal; but as the mountain proceeds north, they rapidly increase their inclination, until they become perpendicular. The mountain now rises to the height of 700 or 800 feet, forming a mural precipice, whose cragged summit, split and rent, shoot suddenly up into sharp turreted spires, or jagged pinnacles, resembling the battlements of a Gothic castle or the minarets of a mosque. At other times, losing this wildness, it is as remarkable for its singular symmetry, as before for its fantastic irregularity. Still retaining its precipitousness, it rises to the height of several hundred feet, its uniform summit, and rude massive symmetry, its steep rocky sides devoid of vegetation, save where some stunted pine has "cast anchor in the rifted rock," all combine to give it the character of a huge Cyclopean wall. This singular structure has been thus minutely described, both from the unique and singular scenery,

"So wondrous wild, the whole might seem,  
The vision of a fairy dream,"

to which it gives rise, and from the connexion it is conceived to have with the phenomenon of the Ice Mountain. At the Ice Mountain, the steepness and walled structure is retained, and the mountain forms an abutment or support to an enormous glacis or bank of rocks, which is thrown up against it on its western side. This natural glacis reaches nearly from the base to the summit of the mountain, and extends laterally several hundred feet from its base. This large accumulation of rocks consists of fragments of sandstone, varying in size from a few inches to many feet in diameter, loosely heaped together, and from their irregular angular shape, generally separated by large interstices. This glacis forms the Ice Mountain—the ice being formed and preserved in its interstitial cavities. The Ice Mountain was visited by the writer in the summer of 1838, a season memorable in the annals of western Virginia for its long, distressingly hot drought, so fatally blighting to the crops. The heat of this season, though unparalleled in that region for duration and intensity, but slightly affected the temperature of the Ice Mountain, as ice was found in great abundance by removing the rocks to the depth of a few inches. A thermometer on being introduced into one of the cavities between the rocks, so as to be exposed to the air without being in contact with the rock, rapidly sunk to below 40°, and would doubtless have been still further depressed, had it been permitted to remain. The general low temperature of the rocks was evinced by the moisture which either studded their surface, or trickled from their sides; the result of the conden-

sation of the aqueous vapor of the atmosphere, by the low temperature of the rocks, although at the time the dew point must have been extremely low. During the previous winter the rocks had been removed to the depth of three or four feet, and the cavity thus formed filled with snow, and loosely covered with planks, but so slightly that the snow could be seen through the crevices of the covering; but though so imperfectly protected from atmospheric agencies, the snow exhibited not the slightest traces of the heat of the past summer, and was still as dry, friable, and crystalline, as if newly fallen. The dairy mentioned by Kercheval, has three of its sides surrounded by the heap of rocks, and hence partakes of the low temperature of the mass. The sides of the dairy were not however, as in ordinary seasons, encrusted with ice, nor were icicles pendent from its roof, but its temperature was still sufficiently low to subserve all the purposes of a dairy and refrigerator. The temperature of the spring which issues from the base of the mountain, singular to say, seems unaffected by the low temperature of the overlying mass, and though reputed to be nearly as low as the freezing point, is in reality but one degree lower than the springs of the neighborhood, and no lower than some others in the same county, which vary from 51 to 52°. The scene as viewed from the base of the mountain, was as interesting as paradoxical; on the one hand was the Cacapon River converted into a stagnant pool, its indurated bottom exposed at short intervals—the drooping foliage of the forest—the blighted grain, tinged not with autumn's golden yellow, but a sickly hue, denoting that it had prematurely fallen into the sere and yellow leaf—all too plainly indicating the long-continued action of summer's heat. On the other hand was a mass of rocks below the freezing point, enclosing in its cavities snow and ice, while the spectator himself enjoyed an atmosphere whose bland, spring-like softness formed an agreeable contrast to the distressingly hot one\* (96°) for which it had a few minutes before been exchanged.

Having thus given a detailed description of the Ice Mountain, it may not be uninteresting to inquire into the causes which give it a temperature so singularly independent of all those influences which usually determine the temperature of terrestrial bodies—a temperature upon which the summer's heat, neither in ordinary nor unusually long and intensely hot seasons, exerts the slightest influence. The solution I conceive is to be found in the large and unusual collection of rocks, which from their porous, homogeneous texture, are extremely poor conductors of heat. By reference to the foregoing description, it will be seen that on one side is the mountain, consisting of a massive wall many hundred feet in thickness, and heaped up against this as an abutment, a pile of rocks containing many thousand cubic feet. The cavernous nature of this heap, would admit the free percolation of rain, which, during the winter, would form ice in the interior of the mass, and reduce its temperature to the freezing point. The ice thus situated would be entirely protected from all external heat by the surrounding rocks, as ice

\* A few moments previous to starting for the mountain, at 2½ P.M., the thermometer stood at 96° in the shade.

in a refrigerator is isolated and protected from the surrounding temperature by the bad conducting sides of the refrigerator. The Ice Mountain only requires for the explanation of its phenomenon, the application of the familiar principle upon which is constructed the common refrigerator, which, by the bad conducting nature of its sides, temporarily effects what the Ice Mountain permanently does; a temperature independent of all external causes. The Ice Mountain is in fact a huge sandstone refrigerator, whose increased and unusual effects beyond those of the ordinary refrigerator, are due to the increased and unusual collection of poor conducting materials, which form its sides.

Similar, though inferior, accumulations to that of the Ice Mountain, from geological causes unnecessary here to explain, frequently occur in Hampshire, and the adjoining counties. Observation in every instance showed them to have a temperature far below that of the surrounding atmosphere. That this low temperature is permanent, is proved by the universal custom of persons residing in the vicinity of these accumulations, so constructing their dairies that three of their sides are enclosed by the rocks in the same manner as the one already mentioned at the Ice Mountain. Even a thin layer of poor conducting materials affords a much greater protection than would be anticipated by those whose attention had not been called to the subject. The means resorted to by the shepherds of Mount Etna, for supplying their flocks with water, exhibits the protecting influence of a slight covering of bad conducting materials. The shepherds, during the winter, cover the snow with a layer of volcanic sand and ashes a few inches in thickness, which perfectly protects it from the sun, and preserves it throughout the summer, thus affording them an abundant supply of water for their flocks where it could be obtained from no other source.

A still more interesting and striking proof of the perfect isolation from external causes, by a poor conducting covering, is attested by the fact, that a large glacier of ice and snow was overflowed by a stream of hot lava from Mount Etna, without being destroyed.\* The ice thus covered by the lava was protected by it from the summer's heat, and continues thus preserved to the present day. This can only be explained by supposing that the lower portion of the lava current immediately upon its contact with the ice, was reduced to the temperature of the glacier, and that this reduced stratum, from its imperfect power of conducting heat, protected the ice from the hot lava above.† Whatever may be the explanation of it, or however paradoxical it may appear, the fact is attested by too high authorities to be doubted. Public attention was first called to this interesting fact in 1828, when the discovery was made by Signor Gemmellaro, in searching after ice. It has been subsequently examined by Lyell and other distinguished geologists, who confirm the report of Signor Gemmellaro. Excavations made for removing the ice, have exposed the lava for several yards, overlying the glacier, and so super-imposed, that the relative position of the lava and glacier can only be accounted for by supposing

that the latter was overflowed by the former, in a molten state. Monte Testaceo may be instanced as presenting a phenomenon more strictly parallel with that of the Ice Mountain, and as affording a happy illustration of the principle so frequently alluded to. Monte Testaceo is situated in one of the suburban *rioni* of Rome. It is merely a large mound, composed of fragments of earthenware vases and urns, and is supposed to mark the site of an extensive ancient pottery. This accumulation of bad conducting materials preserves a uniform temperature, many degrees below the mean temperature of the climate, and on this account artificial cavities formed by digging in the sides of the hill are used as wine vaults.\* In July, 1773, Prof. Pictet found by observation the temperature of one of the caves to be 44°, while that of the external atmosphere was 78°. If this comparatively small accumulation produces this effect in Rome, where the mean temperature is 60°, it can readily be conceived that the still greater accumulation at the Ice Mountain, would produce a similar but increased effect in a climate where mean temperature is but 51 or 52°.†

In endeavoring to elucidate the phenomenon of the Ice Mountain, the effect resulting from the bad conducting power of the rocks has alone been considered. Their nature as absorbents of heat should also be estimated, as from their dull white color most of the heat would be reflected, leaving but a small portion to be absorbed by the rocks. It should also be borne in mind, that the air, immediately in contact with the ice, would be, from its low temperature, specifically heavier than the external atmosphere, except in midwinter, and could only be replaced by atmosphere heavier than itself, which would necessarily be colder. It hence follows that the ice could only be affected by the hot air of summer, so far as its heat is conducted by the surrounding rocks, which, as will appear from the foregoing explanations, must be very inconsiderable. These remarks and the examples adduced, will, it is presumed, sufficiently illustrate the proposed explanation of the low temperature of the Ice Mountain. Should this explanation prove unsatisfactory, it may at least serve to invite attention to the subject, and elicit a more satisfactory solution from abler sources.

C. B. HAYDEN.

Smithfield, March 1st, 1841.

#### MODES OF MEASURING GRAIN.

To the Editor of the Farmers' Register.

Edisto Island, S. C., March 1st, 1841.

In the Southern Agriculturist of May, 1834, I published a "rule for ascertaining the quantity of shelled corn in a house of any given dimensions." I perceive, in your last number, that this rule has been referred to by a writer in the Kentucky Farmer, Mr. John Lewis. He admits that it is simple, and of easy application, but suggests that it cannot be accurate in cases where a given measure of corn in the ears, turns out, when shelled, less or more than half of that measure. The gentleman is right; the rule is derived from arithmetical principles, and, so far, is correct, but it ope-

\* Lyell's Geology, Volume 2nd, page 124.

† Lava, from its open vesicular texture, is an extremely bad conductor of heat.

\* Jameson's Philosophical Journal.

† Deduced from observations on the temperature of the springs.

rates upon the presumption, that a bushel of corn in the ears, will turn out half a bushel of shelled corn. Where this is not the case, it can, however, be modified, and the true quantity ascertained. The following is the process: Measure off, accurately, ten or more level bushels of ear corn, (the greater the quantity the smaller will be the error); shell the same, and by correct measurement, determine what proportion it bears to the corn in the ears. Suppose, for instance, that it is ascertained that the lot of corn turns out 22 quarts of shelled, to the bushel of ear corn. Find the cubic contents in feet, by multiplying the length, breadth and depth of the bulk to be measured, together; multiply the product by 8, and cut off the right hand figure, (not the *two* right hand figures, as stated by Mr. L.) At this period of the operation, we have ascertained the number of bushels of ear-corn, and the rule would apply with perfect accuracy, in the measurement of wheat, rye, oats, or grain in bulk; the figures on the left hand are the number of bushels, that on the right hand, the decimal of a bushel. To reduce this quantity to shelled corn, we now make use of the proportion established above. Multiply the figures on the left hand, (rejecting the decimal as unimportant,) by 22, and divide by 32, the number of quarts in a bushel; the quotient will be the number of bushels in the bulk. In a bulk of ear corn which measures 12 feet in length, 11 in breadth, and 6 in depth, there will be found, by the above calculation, 633 bushels and 6 tenths of ear corn, or 435 bushels and 6 quarts of shelled corn.

*Example.*

12	
11	
—	
132	
6	
—	
792	cubic feet.
8	
—	
633.6	
22	
—	
32	13926

435 bushels, 6 quarts.

In this section of the country, the bushel of ear corn will yield about half a bushel of shelled corn; accordingly, adopt the rule given in the *Southern Agriculturist*. It is the same in principle as that given above, but is more expeditious in practice, owing to our being able to arrive at the result by simply multiplying the cubic contents, when found, by the decimal 4. Thus,

792 cubic feet,  
4

316.8

Three hundred and sixteen bushels and eight tenths.

WM. M. MURRAY.

**LIQUID LEATHER.**

Dr. Beruland, of Larria, in Germany, is said to have discovered a method of making leather

out of certain refuse and waste animal substances. He has established a manufactory near Vienna: no part of the process is explained; but it is stated that the substance is at one stage in a state of fluidity, and may then be cast into boots, shoes, &c.—*Bristol Mirror*.

**A NEW AND SUCCESSFUL MODE OF GUARDING PEACH TREES FROM THE WORM.**

To the Editor of the Farmers' Register.

*Fincastle, Va., Feb. 27th, 1841.*

Although my name is not on the list of your subscribers, I have had the satisfaction of reading some of the valuable articles which appear in your journal. Though unacquainted with you personally, as I feel some interest in your periodical, I will take the liberty of introducing myself, by giving a brief sketch of an experiment I have made, with success, on the peach tree; and if you deem it of any importance, or worthy the notice of your readers, you can give publicity to it.

As I consider the peach the most delicious fruit of our latitude, I have long since thought it a desideratum that it should be made independent of the destructive worm which kills the tree. I thought it practicable; and it occurred to me that there was in reach an antidote for the enemy to that luxurious growth. Having observed, in the practice of medicine, that the cedar berry was a powerful vermifuge, I transplanted cedar scions and peach scions together six years since, in the following manner: I set one of each in a hole, with the roots entangled and set close together, believing that the strong odor peculiar to the cedar would prove offensive and sickening to the worm, and thereby prevent its approach to the peach tree. Every circumstance seemed to conspire in favor of the experiment; there was no danger of the peach tree being choked by the cedar, because the former is a rapid, whilst the latter is of very slow growth. The peach scions bore the second year, and have put forth their leaves as black as a cloud every season, and bore most luxuriantly every season, until the last, which was the sixth year. I have set out a number since, in the same way, which are all flourishing. I think a soil should be selected much mixed with sand, in order to prove successful.

WM. N. ANDERSON.

**DRAINING.**

From the Farmers' Cabinet.

Sir:—A friend has put into my hands a pamphlet on draining, and deep ploughing, by Smith, of Deanston, the inventor of the subsoil plough. It is an interesting work, on subjects that have, hitherto, shared but little of our regard, but which are of the highest importance; for, if we wish to better our condition, we must adopt that mode of management by which England has been enabled to support a population the increase of which has been in the proportion of one third, in a very short space of time, and without which this never could have been accomplished.

The work naturally divides itself into two parts, first, draining; second, subsoil ploughing; which, although closely connected, in beneficial results,



are not, of necessity, dependent on each other, as either the one or the other may be adopted separately, with decided advantage. But it must be confessed, there are, to appearance, serious difficulties to the introduction of either at present, to the extent there proposed, if it be only on the score of expense, for few persons would be induced to incur an outlay of forty-five dollars per acre for draining, and six dollars an acre for one subsoil ploughing in contemplation of future remuneration; such management must, for a season at least, be confined to men of capital and ample resources.

Smith's system of draining is novel; and it is introduced to notice by disparaging that of Elkington, which has, for many years past been considered as the most perfect that could be devised; and the author of the new system admits that many intelligent men still advocate and practice that mode, which is, to carry the drains *across* the declivity, cutting off the springs before they rise to the surface, by which, when they are judiciously laid out, one deep cut has been known to supersede the necessity of dozens when conducted according to the old mode—in fact, one drain has been known to draw off the water from many acres of wet land, a mile or more distant. But by the new mode adopted by Mr. Smith, every field upon the farm, whether wet or dry, or whatever be its subsoil, be it never so porous, is drained at regular intervals, from a distance of ten feet only between the cuts, up to forty; by two feet and a half to three feet in depth, all carried *down the declivity*, instead of *across* it; which, to any one accustomed to the practice of draining, will appear novel indeed! He says, "it has been pretty generally believed and argued, that drains laid off, in this manner, *on a steep*, will not be so effectual in catching water; but this notion can be shown to be erroneous. Drains drawn *across a steep*, cut the strata, or layers of subsoil, transversely; and as the stratification generally lies in sheets, at an angle to the surface, the water, passing in or between the strata, immediately below the bottom of one drain, nearly comes to the surface before reaching the next lower drain;\* but as water seeks the lowest level, in all directions, if the strata be cut longitudinally, by a drain directed *down* the steep, the bottom of which cuts each stratum to the same distance from the surface, the water will flow into the drain at the intersecting point of each sheet, or layer, on a level with the bottom of the drain leaving a uniform depth of dry soil."

Now, it is reasonable to ask what is to prevent the water which rises to the surface by these "strata which lie in sheets, at an angle to the surface," at the top of a declivity *between* these drains, from flowing down to the bottom, if there be not a cross drain to receive and conduct it away? To be sure, it might be argued, that if drains are but ten feet apart, the distance for the water to flow to find them will be but five feet, at any given point; but as water always seeks the lowest level, which is at the bottom of the declivity, it is natural to expect that it will make its way thither directly down the hill, without turning either to the right or left; and this has often been witnessed where

drains have been injudiciously placed; indeed, it is novel to propose to drain a spouty hill, by carrying drains *down* the declivity, instead of *across* it. And as to the fear of "the water passing in or between the strata, immediately below the bottom of one drain, nearly coming to the surface before reaching the next lower drain," any regular drainer knows, upon inspection and examination, the proper distance at which to lay off his drains *across* the hill, to prevent all that.

It is *novel* to find it proposed to drain every acre of the farm, without regard to soil, situation, or state of moisture; and many will consider it a waste of labor, and expense, and by no means necessary. It is indeed strange to find any one advocating the drainage of "beds of open sand and gravel," but so says the book. "In the natural circumstances of the soil on the surface of the earth, the drainage is extremely various, from that of the light, dry loam, incumbent on deep beds of open sand or gravel, to that of the thin, sterile crust of soil resting on massive beds of impervious till: in the former, there is no water springing to that soil from below, and whatever falls upon the surface in the shape of rain, is instantly absorbed, and passes through the sand, or gravel, to some outlet at a lower level;" (then why, in the name of common sense, drain?); "in the latter case, on the contrary, water, whether springing from below or falling upon the surface as rain, must either run slowly off over the surface, however great the distance, or in the event of a horizontal surface, must remain stagnant until evaporated by the sun, or absorbed by the atmosphere" (then, in the name of common sense, drain?); "on such a subsoil, a sufficient depth of active soil can never be long maintained, for grain; if trenched and enriched by lime and dung, it will bear but scanty crops. Some soils, again, are incumbent on subsoils *partially* pervious to water—such, by judicious management, produce sometimes good crops, in favorable seasons, but when much rain prevails, they are neither large or of good quality; these are unfit for wheat, as the alternate frosts and thaws of winter, acting upon the water in the soil, are sure to throw out the plants. But on those soils incumbent on open rock, especially on whin, or green stone, which is very open, from its many fissures, the land is *uniformly fertile*" (then why drain?); "But," he observes, "the drains should be run parallel to each other, and at regular distances, and should be carried throughout the whole field, without reference to the wet or the appearance of portions of the field; as uniform and complete dryness is the object;" directing that the drains, in a stiff, strong till, be run within ten or fifteen feet of each other; if in a lighter and more porous subsoil, from eighteen to twenty-four feet will be near enough, but in *very open soils*, forty feet may be sufficient. He says; "a very important advantage of having the drain *down the steep*, is the prevention of mud or sand, the current having force, from the declivity, to carry them along to the main drain;" but, he afterwards adds; "indeed, the water passing into the drains by filtration, being perfectly pure, has no sediment to deposit, for even during the heaviest rains, the water passing from a properly made drain, has merely a milky tinge." Now how is this to be understood? If the water is perfectly pure, it will have no tinge at all, and whether at any

\* But this will not happen if the drains are conducted, as he proposed, at the distance of ten feet only apart.



time, *milky or inky*, must depend on the strata through which it has passed; but whatever the colour, if it has any tinge, there must be sediment. In forming under-drains, it has ever been the custom to lead them by as *easy a descent* as would be prudent, to prevent the possibility of washing, lest they might thus become choked, and blow up; and even Mr. Smith himself seems to admit the danger of this, for he says, "it is quite necessary to fill the drains, which, are carried *down the slope*, with stones of a small size, or with *danders or gravel*, to prevent the current of water from cutting or running the bottoms of the drains," and by which they would, of course, become choked, and blow up.

Any how, the subject is one of great importance, and ought to be examined into, with the view to establish some system for adoption whenever necessary; for there is no improvement so great, profitable, or lasting, as draining, when properly executed. M. C.

*Wilmington, Delaware.*

Mr. Smith has, within fifteen years, formed on his land under drains to the extent of *one hundred miles* in length!

#### PREPARED NIGHT SOIL MANURE.

From the Farmers' Magazine.

MM. Payen and Buren, chemists, in France, have produced a powder, the mixture of which with night soil, almost immediately frees it from offensive smell. It is then prepared, and when ready for use, resembles fine black mould, so dry and powdery as to be passed through the drill, and deposited with the seed. The efficiency of this manure has been most satisfactorily proved in France. A quantity sufficient for manuring two acres can be packed in a sugar hogshead, at an expense of from thirty shillings to twenty-six shillings an acre.

#### THE CURRENCY—AS CONNECTED WITH THE INTERESTS OF AGRICULTURE.

From the American Farmer (Editorial).

*Text.*—"Does the plan and purpose of your work, preclude essays on political economy? (I am fully aware that party politics are properly excluded.) If not, I would suggest that some well selected articles on currency, be inserted. At this particular time, it is essential to the interests of agriculture, that the true and unchangeable principles of currency, be understood by the farmers, so that an end may be put to that false system, by which so many evils are engendered to afflict the country."

*Comment.*—In the above suggestion of a correspondent, whose valued communications, like angels' visits, are too "few and far between," we heartily agree. "At this particular time, it is essential to the interests of agriculture, that the true and unchangeable principles of the currency be understood by the farmers. But let us first answer the inquiry, whether the plan of this work precludes essays on that subject. When an editor is but the "hiringling" of the publisher of a periodical,

for a given stipend, he is bound, as long as so engaged, to conform to the views of his employer; and he, like the rest of mankind, must be expected, in the first instance, to consult *his own interest*. Unfortunately for the independence of the press, and the good of society, such are the force and prevalence of deeply rooted prejudices, and the intolerance of party spirit, which soon spring up and gain ascendancy in all republics, that he, who, regardless of both, would boldly maintain the cause of truth, and of the public weal, too soon finds himself in the unenviable predicament of the old man, his son and his ass. His journal is deserted by all parties, and himself left, with his family, to starve, unless like a bear, he can live by *sucking his paws*! That system of government is to be esteemed the most perfect, which insures the greatest conformity of individual interests with the interests of the public. A system under which he who in a fit of jealousy, or to avoid the torments of love, throws himself into a gulf, shall be considered a fool—while, for the same action, to save his country, he would be regarded as a hero. Alas! how many publishers of papers might, in this our republic, sacrifice themselves in the cause of patriotism, before one of them would gain for himself the name of Curtius!

We have more than once expressed the conviction, that no class of American citizens can be more deeply interested than the farmers and planters, in understanding the *true principles of the currency*, and in having these principles embodied in the *legislation of the country*. If there be any one sound conservative maxim, more than another, that we would indelibly impress on the minds of our countrymen, it is that they should look more to its *legislation*, and less to its *executive action*, for the developments of our internal resources of wealth and happiness; and the security of private rights and the maintenance of public liberty; and what subject of legislation is more important than that of the *currency*—the circulating medium which shall serve as a standard or measure of value for all the products of agriculture and all other branches of industry? But, to the discussion in this journal of a question so intimately blended with the business and prosperity of every community, there are various obstacles, and difficulties. In the first place, (let the truth be told them frankly, by one who has devoted his labors to their welfare, *con amore*, for more than a quarter of a century,) farmers are, in general, too little addicted to *thinking* for themselves—too impatient of the intellectual exercise necessary to an understanding of this question—not at once seeing its palpable connexion with their every day concerns, they look on it as an abstruse problem, to be studied in the closet of the politician, and solved only by elaborate writers on political economy and the wealth of nations—and secondly, the question has been so mixed up with the struggles of contending parties, that it is impossible to discuss it in a paper which honestly aims at the public weal, without being at once set down as the partizan or slave of one or another of the parties contending for supremacy in the government.—How, except in this way, and under this apprehension, can we account for the silence of all our agricultural journals on a subject which, if properly touched, would reach at once, by the "pocket nerve," the sensorium of all their read-

ers? Who that admires, as all must do, the abilities of many of the conductors of our Farmers' Registers, will ascribe their silence on this all-absorbing topic of the currency, to any want of appreciation of its importance, or of capacity to investigate it? Those among agriculturists who cannot be charged with neglect of all intellectual exercise, yet have their feelings too much engrossed, and their reading too much confined to party recriminations, or to mere practical details of experimental agriculture in the strictest sense of the word.

Commerce could not flourish without agriculture and manufactures, and their productions as its basis and material; on the other hand what but commerce can give activity and value to the culture and products of the soil and the loom? Again—did any nation ever exist where *credit* was so necessary and important, to purchase labor, to foster genius, and to develop dormant but fruitful resources, as in this vastly extensive and unexplored country, whose mountain sides and valleys need but the plough and the pick to yield unbounded wealth and the means of sustaining a population without limits—yet if an agricultural paper should eulogise commerce, and invoke the legislature to give it encouragement, as the handmaid of agriculture, and the great promoter of civilization and the arts; if it should advocate a system of financial legislation under which credit shall supply to genius and industry the place of capital—straightway it shall be denounced, and by many thrown up, as being inimical to a party, whose views have been interpreted and condensed in the memorable exclamation—“perish commerce, perish credit.” Hence the difficulty of discussing, impartially, a question which, next after a few cardinal principles of liberty,—such as the freedom of speech and of suffrage, the independence of the legislature on the executive branch of the government, and the trial by jury,—is of the highest practical importance to every citizen of the republic, and we repeat, to none more, if as much, as to the farmer and planter. \* \* \*

We entirely concur with our brother agricultural editor in the general position assumed by him above. The agricultural interest, more than any other, is deeply concerned in securing and preserving a *sound currency*; and though the direction (or misdirection) of banking and the currency, has been heretofore left to the management exclusively of merchants, and bank debtors, and exercised for their exclusive profit, it rightly belongs to the agricultural class—not only because of their legal right, as forming the great and general interest of the country, but because of their much deeper stake in the game. A change of only 5 per cent. in the value of the currency, which is but an ordinary and every-day degree of fluctuation, is enough to alter the value of the lands and farming stock, and other property of farmers, to the amount of perhaps twenty millions of dollars. And when money values are altered by the depreciation of the currency to the extent that was produced in 1815, the losses, or the destruction of

value in the property of the agricultural interest, amounted to hundreds of millions of dollars. Truly there is no question of more vital importance to the agricultural interest than the proper regulation of the currency; and we greatly desire, and will lend our humble efforts, in this journal and elsewhere, to extend information on this subject, and to urge the agricultural class to assume their right, and to act and to govern in this matter.

But it is very strange, that, agreeing so perfectly in the premises, our brother editor and we should differ so widely in our conclusions. For, from his remarks following the above, (and which we do not copy,) it is evident that he considers the policy that would most *restrain* bank paper issues as the most hurtful to a sound condition of the currency; while, on the contrary, we would advocate still more restraint, (though not by the usual and absurd and ridiculous mode of legislative prohibitions and penalties;) and deem irredeemable paper money and irresponsible banking operations and bank credit, existing and sustained merely by government, as constituting the greatest curse of our country. By the fraudulent and irresponsible banking system of this country, a state of general bankruptcy was produced between 1813 to 1819; and a like condition of things is now threatening, unless prevented by restraining or stopping the operations of all really bankrupt institutions. We are far from belonging to the “perish credit, perish commerce” school, stigmatized above. We value, and desire for the country, as much as any can do, a *sound credit system founded on confidence properly placed*. And we would leave banks as well as individuals to acquire and retain or to lose their credit, and the confidence of the public, by their acts, and their reputation for wealth, honesty, and fidelity to their engagements. We would not oppose, but would advocate *free trade* in banking and in money, as in every thing else; and would not object to any amount of banking, if done upon the proper capital and credit of the bankers. But while being thus willing to accord to the business every facility and degree of freedom that any other trade or mode of investing capital possesses, we would not grant a tittle more than other pursuits enjoy by law; but would leave banks and banking to stand or to fall, by their own acts, and their own success and credit, or the reverse, and to be as strictly responsible as any individual traders; and by no means would we consent to build up their credit and their profits, by giving them the use of the money, or sustaining them by the credit, of either state or federal government, and still less of using government interposition in their favor whenever requisite to save them from the proper consequences of *bankruptcy*.

But, whether these or the opposite and prevailing opinions are correct, we and our fellow editor, though standing exactly opposed in conclusions, agree that the subject ought to be brought before our readers and the agricultural community. We shall therefore follow his example in this respect. And, in the first place, as there is a most deplorable want of information, and of facts, in regard to the frauds and evils of banking—owing to the influence and power which the banks and the commercial class possess, and exercise to muzzle the newspaper press—we shall endeavor to throw some little light upon this deeply darkened and disguised subject. The weekly summaries of news, which have been presented in our weekly issues, have been principally made up of bank items; not from previous intention, but because, in the two months since the publication was commenced, there have been as many and important bank events—resumption and re-suspension of payments, acknowledged and unacknowledged bankruptcies, wholesale frauds of officers, &c.—as ought to be looked for in twenty years. We shall continue this record, and print together the weekly summaries of banking news at the close of each monthly number, and also present some more extended views and arguments, for the purpose of giving light where it is so much wanting.—E.D. R.

#### INFLUENCE OF NATIVE MAGNESIA ON VEGETATION.

From the Journal de Pharmacie.

The presence of magnesia was regarded as a cause of barrenness in lands, until the investigations of Bergman proved magnesia to form one of the principal constituents of fertile soils. This inquiry has been taken up by Prof. Giobert, who concludes from various experiments: 1st, that native carbonated magnesia is not injurious to the various functions of vegetables; 2nd, that on account of the solubility of magnesia in an excess of carbonic acid, this earth can exercise an action analogous to that of lime; that a magnesian soil may become fertile when the necessary manure is employed. From these facts naturally proceeds the conclusion, that if the magnesia was dissolved in an excess of carbonic acid and water, and had entered, like the lime, into the composition of the sap, it ought to be found in the plants with the potash, lime, oxide of iron, &c. M. Abbene has ascertained this by the analysis of the ashes of plants which had grown in magnesian mixtures. He has also confirmed the experiments of Prof. Giobert as regards the influence of magnesia on vegetation being analogous to that of lime; and he likewise concludes that when lime and magnesia exist in arable lands, the former is absorbed in preference by the plants, on account of its greater affinity for carbonic acid. The barrenness of magnesian lands is not referable to magnesia, but to the cohesive state of their parts, to the want of manure, of clay, or of other components to the large quantity of oxide of iron, &c. Barren magnesian soils may be fertilized by

means of calciferous substances, as rubbish, chalk, ashes, marl, &c., provided the other conditions be fulfilled.

#### THOROUGH DRAINING.

From the Ayr Advertiser.

I would particularly impress upon you the importance of furrow or thorough draining as a means of improvement. Its wonder-working effects have only to be seen to be appreciated, and not the least astounding fact connected with its history is this, that while a difference of opinion exists with respect to most other agricultural matters, there is no instance of any person remaining unconverted with respect to thorough draining, where the practice has been at all known in his district. To show you the extent to which thorough-draining is carried on in Scotland, I shall mention one instance—in the county of East Lothian, a very small county, above 3,000 miles of tile drains were made in the year 1839, besides stone drains. But nothing would surprise you so much as to see the land which it is there considered necessary to drain, land which would here be considered perfectly dry. I had a letter, a few days since from a friend of mine, an extensive farmer in East Lothian, who thus writes upon this subject:—"Every day's additional experience convinces me more and more of the immense extent of land, at present considered dry, which actually requires to be furrow drained, and which would, in a very short time indeed, amply remunerate the occupier, were the operation carefully and correctly performed, notwithstanding the heavy outlay, which makes it almost a landlord's question. We have at present thirteen men cutting drains in one field, and the quantity of water in every drain is almost incredible; and this on land that was thought *dry ground*, and a part of the small quantity of ground deemed *turnip* land in Fenton twenty years ago." I should trespass too long on your time were I to enumerate all the advantages of thorough draining, even supposing I could enumerate them; but there are one or two so obvious, and of so much importance that I cannot avoid mentioning them:—1st. You may do away with narrow ridges on drained land, by which a great point is gained—the making what are at present deep furrows, and producing nothing as productive as the rest of the field. 2d. Less manure will suffice. Lord Gosford, from the opinions I have heard him express, will tell you how great an enemy to manure water is, which explains the reason of this effect of draining. 3d. Less seed and labor will be required. 4th. Your crop will ripen evenly. 5th. You may clean your land of weeds at almost any season, and while you have more time to remove them you are likewise cutting off one great cause of their growth. In conclusion, I would particularly press upon you this consideration, that if it is worthy a farmer's while to pay men for making drains in a country where daily laborers are earning 10s. per week, how much more inexcusable in you is it, having your own hands to work with, and, probably, much spare time, to allow your land to suffer from that fatal disease which may be well compared to dropsy in the human patient.—*Mr. Filgate's Speech.*

## REMARKS ON SOME PORTION OF THE "PRIZE ESSAY" OF DR. WM. L. HORTON.

An essay on manures, and other means of enriching lands, by Dr. Wm. L. Horton of Harford county, Md., was published in a late number of the 'American Farmer' in the imposing attitude of having received the prize offered by the proprietor of that paper for the best essay, to be prepared and offered on that subject, and with that view. The high ground thus assumed for this communication, and which will probably cause it to be republished and praised in many other papers, makes it proper for us to take some notice of it—instead of passing it unnoticed, as would otherwise have been done, if judging it upon its merits, instead of its pretensions.

This essay is any thing but a practical guide to agriculture. The opinions advanced and directions given do not appear to be the result of experience and practical knowledge. Whether practical or theoretical, there is but little in the essay that is either new or original, and that little is worthless. Some of the things which we admit to be both new and original, are the following opinions on turnips and white clover:

"As to turnips, they are a very worthless vegetable, and not worth the trouble of cultivation. Six or eight bushels are as many as any farmer need care about raising."

"White clover bears the same rank, in the estimation of the writer, among grasses, that the turnips do among roots—"a very worthless kind of thing"—I would never wish to see a spear of it on a farm of mine. It is a cursed vine that runs from Dan to Beersheba—It is a pest and intruder. We intend to serve it as others have served the Canadian thistle—salt it."

We deem no particular comment necessary on this rare and sweeping sentence of condemnation.

Of lime, as manure, the author speaks in very high commendation, but with even less information than on most other branches of his subject. However, he rejects the different received opinions of the mode of operation, and presents a theory of his own, which, as we cannot pretend to do justice to by abstract or abridgment, will be copied at length in his own words.

"It may be expected that we should offer our views as to the *modus operandi* of lime; this part of the subject we approach with some diffidence, and without any pretension to freedom from error; but as we have embarked on the troublesome ocean of philosophical speculation, we may, as well as our cotemporaries, hazard a conjecture, leaving it to our readers to judge of its accuracy.

"Lime cannot long remain in the soil as a calx, calcium, or quick-lime; but by its attraction of carbonic acid from the atmosphere, it becomes a carbonate. In this primary action of absorbing carbonic acid, a portion is at the same time taken

up by the plant. But why, it may be asked, is lime so durable in its effects upon the soil? That lime has the effect of loosening a heavy, clayey soil, is a point conceded by all who have used it on such soils. I do not believe, with Professor Ducatel and some other chemists, that the oxalic, or any other *free* acid exists to any considerable extent in any soil; lime then is *not* necessary to neutralize an *acid* in the soil. Calcium, or quick lime, is more readily dissolved than the carbonate; and as almost all plants, and particularly wheat and oats, contain a portion of lime, they may receive it as a part of their necessary food in this way. Carbonate of lime, or lime-stone, requires a much larger quantity of water to dissolve it; nevertheless it is while in the soil always undergoing a slow decomposition, and is thus taken up by the plant.

"It is admitted by all who have used lime on such soils, that it renders clayey ones lighter, and sandy soils more compact. The experiments of the writer have been on a soil of the first description—argillaceous—and before he used lime he had great trouble in pulverizing it. Land that was limed five or six years ago is at this time quite sufficiently pulverulent and friable.

"How does lime produce this effect? Is it merely such a mechanical division as is effected on clay with sand, or is it something different?

"Certain bodies, although they may not enter into chemical union, attract each other—repulsion is a property of other bodies. Let us take quicksilver for instance. The ultimate particles of this metal have an attraction for each other, as may be observed when violence is used to separate them, they form into innumerable spherules, or globules. With some substances it will enter into chemical union—with others it will form no such compound. We never see, nor hear of, a carbonate of quicksilver. It will mix with some metals as an amalgam. Tin, lead, silver, gold, are of this class; but it will not mix with iron. There is such a powerful repulsion existing between turpentine and this metal, that the more you attempt to unite them, the more the metal flies into a million parts and utterly refuses an admixture until it is reduced to an impalpable powder or oxide. Honey of the same consistence will not have any such effect.

"Lime has a metallic base—calcium—and Orfila says that clay or argil has also—aluminum—others deny this to clay; but it does not destroy our hypothesis, which is this:—that lime and clay are two distinct heterogeneous bodies; and that so far from having a chemical affinity, or attraction for each other, they are decidedly repellent, and that in attempting to mix them they not only refuse to come in contact, but fly asunder like the balls of an electrometer—or the dust from sealing wax excited by electricity.

"If it be said that the division is mechanical, and such as would be effected by sand, we deny the assertion, and can prove to the contrary in two ways. 1st. We say that the same quantity of sand will not have the same effect on clay. 2d. That a solution of lime will cause clay to become friable. Then beside the natural food which lime affords to plants it loosens the stiff clayey soils, and renders them permeable to their roots in search of their necessary aliment.

"If it be true, as is asserted by many, that lime

renders sandy soils more cohesive, it follows as a corollary of what has been said concerning lime and clay, that the other two are more homogeneous in their nature; and that a kind of adhesive attraction exists between them, thus rendering such soils more retentive of moisture.

"These are merely speculative opinions of the writer, which may not be new to others; they are so however to him. He attaches no great importance to them; yet thinks them quite as reasonable as some others that have been propagated on higher authority."

It is indeed an unquestionable and a very valuable effect of lime, and other calcareous manures, to render stiff soils lighter, and light soils stiffer. But so far from this being the sole or main operation of lime, or mode by which it adds to the productive power of soils, it is surpassed by several others, only one of which the author refers to, (the neutralizing of acid principles,) and that but to deny it, upon his mere *ipse dixit*. If lime did nothing more than to alter the texture of soils, (however beneficial that may be in addition to other more important benefits,) we would readily admit that it would not be worth applying. We do not pretend to unravel the author's explanation of the *modus operandi*. It is however not a little strange, and amusing, that one, making such pretensions to science, and using scientific terms so freely throughout the essay, should make so gross a blunder, as is done in the above extract, as speaking of "calx, calcium, or quicklime," as synonymous terms, descriptive of the same chemical substance. *Calx* was formerly used, before the general adoption of the modern chemical nomenclature, to express the very opposite of *quick-lime*—that is, the *carbonate of lime*, or lime, *mild*, and not *quick*. Kirwan so uses the term "*calx*" throughout his "*Essay on Manures*," a work which Dr. Horton either has read, or ought to have read before undertaking to enlighten the world on this subject. "*Calcium*" which he twice uses as but another name for quick-lime, and expressing precisely the same sense, is neither *quick-lime* nor *carbonate of lime*—but the metallic base which modern chemical discovery has shown to be one of the elements of lime. It is no more *lime* than hydrogen is water, or than soda is common salt. It is true that in a subsequent and totally distinct paragraph, the author speaks of calcium in its proper sense. That can only be accounted for by supposing this paragraph to have been subsequently added without noticing the contradiction to the foregoing and more substantive part; or that this was put down immediately after consulting books, and the two previous statements upon *general knowledge*.

Of marl, (which is treated of as being a different

manure from lime,) there is no mention in the body of the essay; and it is only after having put down all the prose and also the poetry designed for the article, that the author remembered, and in a "postscript" mentions this manure, which has been so largely and beneficially applied in his own state, (Maryland,) to go no farther from his home. All that he says on this branch of his general subject is contained in the following lines:

"*Marls*.—We have unaccountably overlooked these valuable materials for manure, and think proper to say something concerning them here. Marls are mostly found near tide water. They abound from the Hudson to the Gulf of Mexico, in the alluvial formation. They are of two kinds, argillaceous and siliceous, with carbonate of lime. In applying marl as a manure, attention should be paid to this circumstance, as the siliceous will be better for clayey soils, and so on the other hand the argillaceous for sandy. The lime they contain is either from decayed shells, or from shells worn down by attrition. They are durable manures, and should not be neglected when they can be obtained at a reasonable expense."

To *green-sand*, the writer gives something more of space. He has never seen the earth, but suggests that its valuable constituent, for manure, is not *carbonate of potash*, as some preceeding scientific investigators have taught, but *carbonate of soda*, which he supposes (for what reason he has not stated) they mistook for the other. The new suggestion is perhaps worth as much as the old, which it is opposed to; and Dr. Horton's opinion on *green-sand* has the additional merit of being less likely to mislead, by the authority of his name and scientific reputation.

#### THE MARQUIS OF TWEEDDALE'S DRAIN-TILES MACHINE.

From the Farmers' Magazine.

This machine will make 10,000 drain-tiles a day, one man and two boys to attend it, and 20,000 of flat tiles for the drain tiles to lie upon; but if the tiles are broad, for roofing, it will make 12,000 a day. These draining tiles are fifteen inches long, so that three machines would make in one season (of thirty weeks) as many tiles as would lay a drain from London to York. Now, a man and two assistants will only make 1,000 drain-tiles in a day, and these only one foot long, which is 1,000 feet per day; so that if the drain be laid at a distance of twenty-five feet, it will make in one day sufficient tiles for six acres. The advantages are—1st, the tile is much stronger from being compressed, and less pervious to water; it is not only compressed, but it is smoothed over, which gives it a surface as though it were glazed. They are capable of being made of a much stiffer clay than usual; and in nine cases out of ten the clay may be used directly on being dug, if passed through the crushers, being much drier. Clay unfit for bricks and tiles, by the common method, is available by the machinery. The expense of draining will be paid in three years, but not unfrequently in one.

## PRODUCTIVENESS OF PUMPKINS.

From the Western Farmer and Gardener.

*Gentlemen*:—In my last pamphlet, I observed two mammoth pumpkins spoken of. I wish to inform you of something of the same kind. I saw on a piece of ground, about 75 feet square, this fall, 130 pumpkins, and I saw one of them weighed—the weight was 150 lbs., and I am sure that the whole number would have averaged 100 lbs. or upwards. They were raised by Jonas Beeson, Esq., on the bank of the Ohio, in Wood county, Virginia. Yours,

A SUBSCRIBER.

## A VISIT TO MR. ALLEN'S PIGGERY.

From the Albany Cultivator.

*Messrs. Editors*—Being at Buffalo a short time since, and having heard much of the celebrated Berkshire and China stock of swine, and being an admirer of fine domestic animals withal, I determined to make a visit to Mr. Allen and ascertain whether his stock realized the description I had often had of them.

The farm of Mr. A. is charmingly located on the immediate bank of the Niagara river, two miles below Black Rock and five from Buffalo. The ride is a pleasant one. You are scarcely out of the city on a broad and noble avenue, before you are within Black Rock, which stretches along the river for upwards of a mile, on a broad and level street, with several mills attached to its immense water power, created by the great state pier which walls in a portion of the Niagara river, and here forms the head of the Erie Canal, and supplies it with water for half its length towards Albany.

One can hardly imagine a pleasanter location in the summer season, than is presented from the house of Mr. A., having a fine view of Lake Erie some five miles distant; the town of Black Rock and the steeples of Buffalo, with the ascending highlands stretching far away beyond them—the broad and clear Niagara, here two miles wide, checkered with beautiful grassy islands, and the green cultivated shores of Canada opposite. The canal passes immediately in front of the house between the main road and the river, giving every desirable facility of access and transportation east or west, by canal boats every hour in the day.

Mr. A. B. Allen was not at home, having gone to Ohio to pass the winter; but I found his brother residing there for the present, who kindly showed me their extensive establishment, and gave me much valuable information regarding their stock, and other matters appertaining to the domestic and improved animals of our country. The piggery, including a new erection recently enclosed, is now 100 feet long, by about 30 wide and two stories high. It is divided off by a spacious alleyway in its whole length through the centre in two long ranges of rooms. These are subdivided into separate pens from 8 to 12 feet square, as circumstances require, and fitted up in the most approved style of convenience. In these were the breeding sows, some with young litters of pigs, others two or three together, and some single, as their different conditions and circum-

stances required. In one end was a steaming apparatus, with huge tanks or vats for steaming the food, supplied with water by a large cistern under the building. Overhead were stored quantities of straw for bedding, corn, oats, Indian meal, shorts, &c.; in a word, all the varieties of food with which the swine are fed. Placed at proper distances through the building were glass windows which pushed back and forward as ventilation was required, but always admitting an excellent light through the day into each apartment. In the rear of each enclosure was a small door for the passage of the animals out into the open air in good weather, and for exercise, a thing almost daily practised. In short, every convenience which thorough and approved breeding required, was here furnished in a cheap and economical manner. Surrounding the piggery, were three or four grass fields for the summer range of the swine, with temporary pens erected for shelter, and suitable feeding troughs in their proper places.

As you will observe that every thing for the convenience and due accommodation of the animals was in apple-pie order, I shall now attempt to describe what I saw of animated nature within. The first object that struck my eye on entering at my right, was an enormous, yet beautifully proportioned Berkshire sow, with eleven young pigs at her side, about three months old. This magnificent animal (excuse the term, for I can assure you that although applied to a hog, it is to one so elevated by the successful application of a noble science in natural economy, that the coarse material of the animal is transformed into an almost superior nature from the common groveling brute of the name,) I learned was imported, with three other sows and a boar, (Sultan, the finest and largest animal of the kind I ever saw,) last year, from Berkshire in England, at a great expense. They were all from separate stocks, in no way related, and of incomparable value to Mr. A. in enabling him to avoid the *in-and-in* breeding system, which much of the finer stock of our country is subjected to, for the want of proper selections from foreign stock of the same blood. This *in-and-in* plan of breeding, Mr. A. has always avoided, and has spared neither pains nor expense in importations and selections from the best stock of this country, to improve and cross with his own, and make it what it now is beyond a question, the most extensive and superior swine breeding establishment in America, if not in the world; now consisting of between 30 and 40 of the finest breeding sows, 2 imported boars, and pigs of every intermediate stage and growth.

But to the detail. This fine sow would weigh as she then stood, near 500 pounds, was in a capital condition and of a perfect model. Fancy could not picture a more beautiful creature of the kind; she was gentle too, as possible, and quiet as a lap-dog. These pigs, I learned, were all engaged at \$40 to \$50 the pair in the spring. In an adjoining pen was another fine young imported sow with 5 pigs equally good with herself, and all perfect of their kind. Adjoining them also, were the two remaining sows of the last importation, now about fifteen months old, and promising in size and appearance, to equal at the maximum, either of the others. Passing along I observed the fine and stately sows purchased

last summer of the Shaker family at Niskayuna, and of Messrs. Meigs and Middleton of Albany, all select animals of excellent form and proportions. Then, again, were a fine pair of young sows from the stock of Mr. Rotch, of Osego, one of the most scientific, perfect, and fastidious of breeders, not excelling in size, but in beauty of proportion and fineness of limb, perhaps surpassing almost any other. Here too were Ravenhair and Picaninny, the prize animals of the flocks, bred with all the honesty and good management of Justice Harwood, one of the principal managers, besides many others, the reserved stock from time to time bred by Mr. Allen himself. Many of these noble sows would weigh four to five hundred pounds in good breeding condition as I saw them. Their food was principally cooked shorts obtained from the flouring mills at Black Rock, a coarse yet substantial food, with occasional changes of corn meal, potatoes, raw and boiled, sugar beet, boiled corn and oats, as the health or appetite of the animals required, both of which were studiously observed, daily and continually by a careful manager. No animal that I saw was fat, yet all were in good condition, and of course contented and well to do. Scattered along throughout the pens, I observed several pigs of various ages and sizes, which the closing navigation had prevented shipping away, or which had been reserved to add to the stock of grown animals; for I found that it was the policy of Mr. A. occasionally to part with a superior, or even a favorite from a well established breeding sow or boar, in extraordinary cases, when he had others equally good at hand, or coming on; but that he made it an undeviating rule never to sell the very best sows in his herd; and by that restriction never suffering any one to possess a better animal than himself. I fancy that if all breeders would adopt and adhere to a rule so correct as this, the standard of perfection in domestic animals would not fall so low as is often witnessed in our country.

After inspecting for several hours, and with great interest, the inmates of the piggery, I was shown in another building, each in his own distinct apartment, the two boars Sultan and Prince Regent. The former is of the latest importation, and is now two years and a half old; an enormous animal, whose weight, if in high condition, would be about 600 pounds. For so large an animal he is fine in his points, being long, rangy, high shouldered, and broad in his hams; of great constitution and vigor, in fine, a most valuable animal for the extensive pork countries of the west, where great size and hardihood are in demand. The other, Prince Regent, now about 18 months old, is the most perfect male animal of the swine family that I ever saw. His size is medium, now weighing, I should judge, about 300 pounds; his head remarkably small and pointed, his ears short and erect; his neck short and highly set; his shoulders broad and firm, body round, deep and long; hams large, well set, and tail properly elevated, with a beautiful silky black hair, and the usual white intermixture of the improved Berkshire in the finest style and fashion. His pigs have proved remarkably fine. Several of them were shown me of uncommon symmetry and excellence. The stock also of Sultan, has proved remarkably good, and those which I saw

at this establishment can hardly be excelled. In short, I know not how Mr. A. can improve his present selection. He has been for several years engaged in breeding and selecting his animals. No one has taken so much pains as he has; his opportunities have been good, and thoroughly improved; his eye and judgment are correct and discreet; and he has, as a matter of course, excelled when perseverance, intelligence and a high sense of integrity in his business have been called to the aid of a natural enthusiasm, and laudable public spirit. Not only personal advantage to himself is the result of all this labor, but a vast public good, and it is no exaggeration to assert, that by the services of this individual, and other spirited breeders of domestic stock in this country, our agricultural profits will in a few years be enhanced millions in the diffusion of improved breeds of domestic animals throughout our several states.

I should not omit to state that I also saw several breeding sows of the celebrated China breed, which is yet retained in its perfection at his establishment. Although much less in size and length than the Berkshires, they are still the original of all true excellence in the family of swine, and by many are preferred for crossing the native breeds of the country, to any other. They are exceedingly scarce in the United States, and I know of no other piggery in the country that possesses them. They are beautifully spotted of about equal parts of white and black; are quiet feeders, easily kept and early matured. The gentleman's hog, the world over.

Having viewed the piggery in all its parts, and admired its order and good management, I accompanied Mr. A. into the house, where he showed me numerous letters and correspondence, which, to judge by their bulk, must be no trifling affair of itself. There were letters of inquiry; others containing orders; some soliciting information; others imparting it. The writers were statesmen, planters, farmers, large and small—professional men and merchants, breeders of fine stock in distant parts—in fact, from all classes of our citizens, the attention of each of whom has been turned to improvement in his domestic stock, and who intends to be on the high road to excellence in all these important subjects of domestic economy. I found that during the past year Mr. A. had sent pigs to Maine and Georgia, and to almost every intervening state on the sea-board, and to Wisconsin and Missouri at the west, and to Tennessee, Kentucky, and the intermediate states in the Ohio Valley. I confess I saw with honest pride that the highest talent of our country was not too exalted to overlook the substantial improvements so rapidly making in our agricultural stock; and when we find numerous exalted individuals of the present time, diligently devoting a part of their attention to the improvement of domestic animals as they now do, it is a gratifying indication that we are in a state of rapid progression. Henry Clay is said to be one of the best and most extensive stock breeders in Kentucky. He last year ordered a pair of Berkshire and China pigs, each from Mr. Allen, and a pair of valuable Chinas were also ordered by one of the wealthiest retired gentlemen in the vicinity of Boston. I name these things as no matter of form, but to show that gentlemen of the first

talent, intelligence and wealth of the country are sedulously turning their attention now, to what a few years since was considered in America proper only for the vulgar and illiterate. And why should they not? The most extensive breeder of short horn cattle in England is Earl Spencer, recently Lord Althorp, and so attached is he to remaining at home and attending to his stock, that it is said he will only go to London on matters of high state affairs, where he is often officially called, when he can do so with entire convenience to the welfare of his favorite herd of short horns!

The success which has attended Mr. A.'s exertions in breeding swine, has brought extraordinary demands upon his coming supply, which cannot much exceed the orders already on hand. Contrary to the common opinion, that the dissemination of these fine animals over our widely extended country, would lessen the demand, it has only tended to increase it, and from present indications, for years to come the demand will keep pace with, if not exceed the utmost efforts to supply a sufficiency of *first rate* stock to those who require them. It should be matter of honest exultation and pride that our agriculturists have so far awakened to the dignity, to the true interests of their profession, as to seek improvement where it has been so long and so heedlessly neglected.

My curiosity was somewhat excited to know by what means Mr. A. was enabled to supply orders for such a distance as he did in many cases, being more than 1,000 miles, with three or four transshipments by water, and occasionally land carriage for many miles. I learned that in all cases the purchasers give the directions of the route to follow, and when the pigs are shipped, either at Buffalo or Black Rock, by steamboat or vessel, or from the farm by canal, with proper directions, they usually reach their place of destination with despatch. Occasional misfortunes occur by accident or bad feeding, want of care, &c., in those to whose charge they are entrusted, by which a temporary disappointment is sometimes suffered by the purchaser; but time and good feeding soon restores the young emigrant to its wonted condition. There is, however, a disadvantage to the appearance of any animal, and particularly so of swine, in transporting it to a great distance, but it must be encountered by those who will have valuable stock, and the risk is abundantly made up in the possession of the animal itself. During the last fall, upwards of 150 head of improved Berkshires left Mr. A.'s piggery for Ohio alone; and 19 went in one lot to a plantation in the interior of South Carolina, without serious accident. I was told that the boar Prince Regent, before spoken of, got so stunted on his passage from England, for want of proper care and feed, that it took him several months to recover his thriftiness, and it may always measurably affect his size.

I find, gentlemen, that I have told you a long story; but as I am an enthusiast in the admiration of fine animals of every description, I have thus spun out my epistle. I cannot close however without mentioning that, in addition to the herd of swine, Mr. A. has a choice selection of valuable short horned cattle, which he is rearing with great care. They now consist of ten or twelve head,

all Herd Book animals. Since selling their former admirable stock at the west, upwards of a year since, where they have been deservedly admired, the Messrs. A. have recommenced this useful branch of stock raising. Success to their efforts; none better deserve it, and few have made greater exertions to excel in this truly noble as well as valuable undertaking.

A WESTERN FARMER.

WHAT CONSTITUTES A SPECIE-PAYING BANK?  
AND WHEREIN DOES IT DIFFER FROM A  
NON-SPECIE PAYING BANK?

"The time has been,  
That, when the brains were out, the man would die,  
And there an end; but now they rise again,  
With twenty mortal murders, on their crowns.—"

MACHETH.

If the questions, which are used to head this article, had been asked a few years ago, there could have been no difference or doubt as to the answers; and the asking would have been deemed both as unnecessary and absurd, as to ask, "What is a horse? And wherein does a living horse differ from a dead one?" But the times are changed—and with them, the common mode of expression, of reasoning, and even the very moral sense of the public, in regard to banking operations; and the distinctions between right and wrong—truth and falsehood—honesty and the most bare-faced moral frauds and violations of faith by banks—are no longer manifest, or considered important to be preserved. The portion of the community who suppose that their interest is concerned in continuing the abuses of banking, (and they have been permitted heretofore to influence and direct the course and policy of the country in regard to banking,) have proceeded from one position to another, from one ground of justification and of claim for the banks to still stranger ground, and have more and more refined, and "split hairs," in their propositions and reasoning, until, at last, it can no longer be pronounced, without fear of contradiction, what or where is a *non-specie-paying* bank, among all the banks and branches in Virginia.

Formerly, for a bank to deserve the character of *specie-paying*, and its bills of forming truly a *convertible currency*, it was absolutely requisite that all legal demands, whether in its bills, or checks for deposits, should be paid promptly and fully, and without denial or objection, or difficulty of any kind being opposed to the demand. Any obstacles and delays to weaken or defeat the claim of the creditor indirectly, would then have damaged the sound reputation of a solvent and responsible bank.



Now all this is changed. All the banks and branches in Virginia, excepting two in this town, (which peculiar circumstances compelled to abandon all such pretence,) have been, since February 1st, and still are, what, in the current language of the day, are called "*specie-paying banks*." Yet, we have before presumed to pronounce, and still pronounce, that there is not even *one* bank or branch in Virginia, that deserves the character of specie-paying.

It is highly important to the interest of the great agricultural community to know the truth in regard to even this question alone; and, as it is an isolated question, which may be discussed separately, and without the necessity of attacking, directly, the main defences of the general banking policy and *banking ethics* of this country, it is possible that on this one separate question, at least, the truth may be reached, and made clear to our agricultural and country readers, whose interests, are not concerned in keeping the truth concealed, and in sustaining every misdeed and moral fraud perpetrated by the banks.

In the first place—plain as this question would be considered under other circumstances, and easy of satisfactory solution, there is almost an entire want of *facts* in regard to the present payments of the banks in Virginia, except such as each inquirer may learn from merely verbal and private information in the neighborhood of each particular bank office. The newspapers are either silent on every point on which truth would be of disservice to the banks, or, more generally, utter what the bank authorities prompt, and wish the public to believe; and no opposite statement is permitted to go before the public, until concealment is either no longer possible, or no longer profitable to the banks.

Thus, for example, the principal newspapers of this state not only announced the commencement of a full and *bona-fide* payment of specie by the banks of Virginia, on Feb. 1st, but proclaimed and boasted that specie payments were continued—and would be continued in spite of every thing—after the Philadelphia and Baltimore banks had again suspended payments. If any contradiction of this boast of the banks has since appeared in any one of the principal newspapers of Virginia, or of the union, it is more than we have been able to learn. It would be as vain to look to the commercial newspaper press, any where south of Philadelphia, for full and correct statements in regard to the banks, as it would have been under the rule of the Inquisition of Spain to have sought in that country for testimony against the doctrines and claims of the catholic

church. We therefore readily admit that we have no *direct* testimony that all or any of the various banks of Virginia, other than those of our neighborhood, are not now in the fullest sense "*specie-paying banks*"—in as much as not a word of contradiction in any newspaper has reached us, to the *general* declaration of general specie-paying, which had been put out by all the banks and newspapers on Feb. 1st. But, we may venture to *infer*, (in the absence of all more certain and trust-worthy testimony,) that the general course of all the banks of Virginia, in this respect, is alike—and, at any rate, that the course of all the different branches of one bank must (in essentials) be the same; and, if we shall show that there is certainly no specie-paying bank in Richmond, nor in Petersburg, it cannot but be believed that there is no such thing in all Virginia—if indeed, now in any other state south of New York.

For greater certainty and clearness, let us narrow our ground and our observations to the town of Petersburg, in which we reside. Of the three banks *here*, as before stated, two stopped specie-payments, immediately after the first news of the last suspension in Philadelphia, and after only six days of (so-called) "*resumption of payments*" in Virginia. This *stoppage of payment* would still have been called (in bank language) *continuing to pay specie*; but a check on one, and bills of the other bank, having been promptly *protested*, and the demand for specie, by check, having been *enforced* upon the Farmers' Bank, the pretence of paying specie, as kept up by other banks, would have been manifestly futile and ridiculous in these cases *at home*. The question then is settled as to these two banks; and they are entitled at least to the credit of confessing (no matter how reluctantly it was extracted from them) that they *do not pay specie*; and in this respect, at least, they deserve more commendation than any of their "*specie-paying*" sisterhood.

The branch bank of Virginia of Petersburg, then, is the only one of our three banks which still professes to pay specie; and we shall proceed to examine the value of that profession. And here let us remark that we take that office as a sample, and from which to infer the conduct of all others, because we fully believe that none other in Virginia has better complied with its obligations, or better deserves the character of a "*specie-paying bank*." And we are thus particular in acquitting this bank from charges which many others are justly obnoxious to, because of our desire to subject one whose course we deem the least objectionable, of all known, to the test question of *specie-paying* or not.

This bank pays (since February 1st,) all its own notes presented for specie, and has paid *some* checks. But the circulation of Petersburg, and of all the surrounding country, is filled up almost entirely with the paper money of other and remote banks of Virginia, and of North Carolina; and scarcely can a note of the Petersburg branch bank of Virginia be found in the circulation of the town. We have examined every note which has passed through our hands since early in January, and can assert that, in the two months, we have not seen a single note of the Petersburg branch bank in circulation in this town. Of the other two banks, very few of their own notes (and which they do not pay) have been met with in that time in circulation here—all of which together would not have amounted to a hundred dollars.

A person who had heard nothing concerning the tricks of the banking trade, would be at a total loss to conceive how the circulation of any town and its neighboring country, consisting exclusively of paper currency, should be almost destitute of any notes but those of the banks of distant towns, with which there was no trading connexion. We, who are not in the secrets of the banks, can only infer the causes and the motives, from the visible course of procedure, and the general results. Since the general bank suspension in 1837, (which came unexpectedly upon the banks here, and before they had prepared to pay specie as is now so easily done,) it has been the policy of all of them to send the notes of each bank as far from home as possible, and to use, in their issues, the notes of the most distant banks. The wide extent of Virginia, and the little commercial intercourse between several of the different sections and the existing system of mother banks and branches, all admirably helped to aid this object. Of course we cannot prove that the notes of the different banks were systematically exchanged for this purpose; but we all know these facts: that, as a general rule, a check on the bank of Virginia, at Petersburg, would, (unless some peculiar circumstances caused an exception,) be paid in notes of other and distant branches, or, still more generally, in North Carolina notes entirely. Nobody objected to these notes of other banks, (as they had both a legal and moral right to do,) because, all being non-paying banks, the notes of all were equally good, or equally bad. The friends of the banks of course wished payments to be made in this manner, for the benefit of the banks; and the few enemies who dared to avow hostility, had no ground to object to this substituted foreign paper, as it was equally current, equally responsible, and alike *inconvertible into specie*. It is easy enough, then, to understand how, by this policy

being pursued for years together, that each bank should very effectually fill the circulation of its own sphere of operations with foreign notes, for which no demand on it for specie could be made. And thus, every bank and branch in Virginia has been so far safe from any considerable demand for specie, made by presenting its own notes. But this exception cannot last long. There is now an inducement, which did not before exist while no notes were paid, to return all notes to the sources whence they issued, and where alone they possess the value of being convertible into specie. Already the brokers (who alone can and do, for their own gain, either curb or punish the worst transgressions of banks,) are working to produce this end; and their operations would soon compel all our banks to be honestly responsible, or to stop, if the expected legislative act of indulgence and indemnity should be withheld.

Well! we have satisfactorily explained how it is, that so far, it has cost the "specie-paying banks" very little specie to claim and maintain that character, by paying their own notes. But their heaviest responsibility was upon checks—and these they *refuse* to pay, except in "current notes," which new (but now very current) term means the worst money that the bank, for its own purposes and gain, has chosen to receive on deposit—as the notes of Wheeling, and Winchester, and Wytheville, and Kanawha, by the Richmond banks, and the notes of North Carolina, by the Petersburg banks. Thus this principal source of claim for specie is effectually cut off.

We will not undertake to affirm that this course is indefensible at law—though we fully believe so. But it certainly never could have been designed to be permitted by the charter. If the law indeed sanctions such an evasion of the obligation to pay specie, then it would be just as well to remove every check and restraint. For when once the people have been accustomed, by use, to this new principle of banking and of bank morality, it can be extended so as to cover every desirable case. If the most remote branches in Virginia are not far enough apart, and enough unconnected in trade to prevent the return of the notes, nor even the exchange with (or borrowing from) the North Carolina banks, to effect the desired purpose, then the notes of Virginia may be sent to Tennessee and Michigan, and the notes of those states brought here and made "bankable" money, and of course "current notes;" and it would be then next to impossible to draw enough money even from a solvent bank, to compel its insolvency to be tested. If this system makes a "specie-paying" bank, it is very ridiculous for any contest to be made, either by the bank men *against* paying

specie, or for it, by their opponents. We would not give a cent to choose between this kind of "specie-paying," and the most open, bold, and fraudulent denial to pay a single dollar, on any ground of claim whatever.

It is one of the common arguments of the day, which we may hear any where in the streets, and which are as current as the banks' "*promise to pay*," that "the bank has received on deposit all sorts of notes—not only of all the branches in Virginia, but of the banks of North Carolina—and that it would be monstrous, and most unreasonable and unjust, to demand specie for checks, drawn for deposits so constituted." Now, in the first place, the rule thus set up for the bank, if good, should work both ways. If North Carolina notes, for example, are to be paid out to checks, because such notes had been deposited, (*by the bank's own rule*, adopted for the bank's own benefit,) either by the drawer, or by others, in ordinary business, then it certainly would follow, that a depositor of specie, or of notes issued by the bank, should rightfully draw specie, or these only specie bringing notes, for his checks. Yet it is well known that such would *not* be permitted, unless as a matter of favor to the drawer, and a departure from the rule of the bank's *right*. All checks, for money previously and generally deposited, stand (and of right ought to stand) on equal footing; all deposits which the bank chooses to receive as its own notes, are thereby made the same (as to that bank) as its own notes; and the bank is in every sense bound to pay for them in its own legal and proper currency. If the consequences were likely to be inconvenient or injurious, and if the practice had not been adopted for the special benefit of the receiving bank, it would be very easy for it to refuse to receive deposits in any notes except such as it agreed to redeem in specie; or, if receiving them, to return them for payment to the banks whence they issued. But this returning foreign notes and receiving their own, is precisely what the banks wish especially to avoid.

But, in fact, (though it is not required to sustain our position,) it is just as convenient and easy for a bank to pay specie for deposits made in one kind of *paper*, as another. Whether made in the notes of the bank receiving the deposit, or of North Carolina notes, it would not add a dollar to the bank's stock of specie; nor would the payment diminish that stock more in the one case than the other. If then it be true, (as is alleged in defence of the banks,) that it would be "impossible for them to pay specie for deposits made in foreign notes," it is equally true that it would be just as impossible to pay them if every deposited note had been of their own issue. We are very willing to admit the impossibility in both the cases.

As it presents a curious incident in the history

of the progress of irresponsible banking in this country, we will copy the notices of this bank, (signed by the cashier,) under which it claims exemption from paying checks, and seeks to avoid all such demands. They are now stuck up at the counter of the Branch Bank of Virginia; and under these, or some equally potent safeguards, the like exemption from paying checks is maintained by all other banks in Virginia.

*"Notice.*

"All deposits made in this office are to be considered as made in current bank notes."

Oct. 16, 1839.

"In addition to the above notice, depositors are further notified, that in order to avoid any difficulty at the counter, they are required to make their checks payable in CURRENT BANK NOTES."

Feb. 11, 1841.

Thus, if this be indeed a "specie-paying bank," (and if this is not, then there is certainly not one in Virginia,) it is guarded at all points against paying specie to any extent either injurious to the bank, or beneficial to its creditors, or to the public interest.

First, all of its own notes (by some means, whether designed or accidental, natural or supernatural, it is not our business to establish) have been taken out of the home circulation, and substituted by others issued by remote banks; and, therefore, readily as its own notes may be redeemed by the bank, there are almost none that can be presented for redemption.

Secondly, all deposits are rendered irredeemable in specie, by virtue of the above notices; or in any other currency than the worst paper money which the bank may choose at any future time to receive.

Thirdly, even if the bank authorities opposed no such obstacles as are above stated to the making payments in specie, the fear of their enmity, and the tremendous influence which they wield over the trading community, would deter nearly every individual from claiming his just rights.

And fourthly, lest all these safeguards should prove too weak, the aid of new legislative enactments will be called in, and of which the purport and force are yet to be seen; but which will certainly fail of their designed object, if they do not secure the banks still more effectually than now, against all possible demands to pay their debts and comply with their obligations.

The three banks in Richmond, like the one spoken of here, pay bills of their own issue only; and, still more strictly, pay no checks, and have paid none, (as a general rule,) since their pretended resumption. It is only a matter of inference that all the other banks and branches in Virginia

do no better, and therefore are *not*, now, nor have they ever been, even for a day, truly specie-paying banks. And if any doubt now exists, we think it will be speedily removed by their admission of the fact of general re-suspension. That will probably be the acknowledged state of things before this article can be issued from the press. The North Carolina banks, which occupied precisely the like grounds, (of pretended resumption of payments, and real continued suspension,) have already, since the foregoing remarks were written, thrown aside the thin disguise, and for the purpose of saving the brokers the trouble of collecting their notes to obtain specie, and themselves from the odium of refusing to pay while professing to be "specie-paying" banks. The Virginia banks will all follow the same course as soon as it shall be deemed less profitable to them to keep up the present deception, than to publish the truth of a general refusal to pay all demands. If the lapse of another week does not bring them to this result, two months certainly will.—ED. F. R.

March 12.

#### ON THE CULTURE OF RICE-GRASS.—LEERSIA ORIZOIDES.

From the Southern Agriculturist.

Pendleton, October 21, 1840.

Mr. Editor:—In the hope of inducing some of our farmers to turn their attention from the exclusive cultivation of cotton, to the improvement of stock, I send you the result of eight years' experience in the culture of hay, on a piece of meadow land, one mile distant from the village of Pendleton. Two branches, whose united streams are sufficient to turn a small grist mill, are kept continually running over the meadow, except during harvest. A day before cutting we remove a small obstruction placed in the natural channel of the branch, when the water leaves the land sufficiently dry for the mowers to work, and a narrow wheeled two horse wagon to take off about 800 lbs. at a load. Immediately after harvest, the bar is replaced across the channel in a few minutes, by drawing mud against a rail laid over it, and the land again put under water. Having made abundant crops of hay several years, at so little expense, I last year laid off one acre, had the wagon carefully loaded by a white man, directing him to make every load as near as possible of the same size, and on weighing one load, found the average product of the acre to be more than three tons, of two thousand pounds each, at the first cutting. The same directions were followed this year, and the product was more than four tons at the first cutting. This greater product may be attributed to a late harvest, and a summer of more rain.

The soil on which these crops were made, is the ordinary quality of low land, near the creeks overflowed only by high freshets. It had been cleared and cultivated several years, producing good crops in dry seasons. I first saw it in 1831,

when the corn on it was nearly destroyed by a wet season; in '32 it produced more weeds than grass, they were all moved—in '33 I was astonished by the product of hay, which has been good ever since. This hay is made from the rice-grass, the "*Leersia Orizoides*" of the botanist, called Nimble Will, in the upper country; it has a fine thin stalk, covering from four to five feet in length, but not being erect, it does not stand more than three to four feet on the ground; no part of the stalk is one-eighth of an inch in diameter, they have been measured more than six feet long. It grows well on the low grounds of branches, and may be found in every part of the state: it is killed by frost, and does not grow in the interior, before May.

I have made various experiments with red clover, herd's grass, orchard grass, and timothy, the two former on wet and dry soils; after two or three years they have been overpowered by the native weeds, grasses, briars and shrubs, which spring up spontaneously when the soil is unbroken. The single enemy of the rice grass is the rush, large and small, which appears to be the only noxious growth of land covered by running water, and this is so entirely outgrown by the rice-grass, that notwithstanding its formidable appearance in the spring, I have taken no measures to eradicate it. By the end of June the rush is so completely covered by the grass, that it is scarcely thought of until the ensuing spring. One great advantage of this grass is, that you can choose the time for cutting, as it does not blossom early. Towards the end of July it seems to settle or lodge in spots, but I am not aware of any injury that results. We commence mowing with a brier scythe, the first fair weather after oat harvest,—the task is a quarter of an acre for the mower; one woman can toss and turn half an acre, which should be done as soon as it is cut, and put up into cocks by evening. When the dew leaves them next morning they are opened at the top, and after an hour's sun on them, all the hay cut before twelve o'clock of the preceding day, may be carted home and put away. Eight or twelve hours' sun is sufficient to cure the hay, if properly tossed and turned immediately after cutting which is easily done with a wooden hay fork. An iron fork is used for loading and unloading the wagon.

The bloom and seed appear late in September. A few days before we expect frost, a second crop is cut and harvested. As this occurs at a busy period in October, we have never measured or weighed the product of an acre; it has been variously estimated at a third or half of the first cutting.

I have never made any comparative experiments of the nutritious qualities of this hay, but have been informed that it sells in the Columbia market as readily as northern hay. One of our most experienced farmers told me that he preferred it to corn blades when wagoning to Hamburg.

Yours, respectfully, C. C. PINCKNEY.

#### VEGETABLE TALLOW.

On the 2d of March, Dr. Royle and Mr. E. Solly read to the Asiatic Society two distinct

papers on the vegetable tallow tree (*Valeria Indica*) of the Malabar and Canary coasts. This tree, which has been figured and described by Rheedee, is found in the Wynaad and Bednore districts, growing abundantly both in the interior and along the coasts, where it is called the Piney, or Dammar-tree. It grows to a great size, and supplies excellent wood. It also supplies a varnish which is used on the coast in a liquid state: but, when dry, is commercially termed *copal* and *animé*. By hoiling the seeds, a fatty matter is obtained, which floats on the surface, becomes solid, and somewhat resembles tallow; being in its most important characters intermediate between wax and tallow, and well adapted in its properties, as a substitute for common tallow, both in the manufacture of candles, and likewise for many other purposes to which the latter substance is now exclusively applied. This vegetable tallow emits no disagreeable smell at any time; therefore, when candles are made of it, they have not that offensive smell which attends common tallow candles. Dr. Babington placed a portion of this vegetable tallow in the hands of a candle-manufacturer, who praised it very highly; he having succeeded in making good candles of it, which came freely from the mould. In 1825, it sold at Mangalore at two-pence-halfpenny per pound. Some brought from India, in January, 1838, sold for £2. 4s. 6d. per hundred weight—nearly the price given for good Russian tallow. Mr. Solly thought that if it could be obtained at such a price as to admit of its being imported as a substitute for common tallow, its valuable and superior properties would soon obtain it a market. Mr. S. Dyer, of the Madras Medical Service, who had long resided at Tellicherry, stated, that the tree will grow readily, even when the branches are put into the ground; and many of the trees were planted on the roadsides in Malabar, about twenty years since, a greater period than is necessary to bring the tree generally to perfection.

#### NORTHERN OPINIONS OF SOUTHERN AGRICULTURE AND AGRICULTURAL PUBLICATIONS.

To the Editor of the Farmers' Register.

Shrewsbury, N. J., 2 mo. 19, 1841.

**ESTEEMED FRIEND,**—In reading the editorial article on a common objection to agricultural periodicals, as contained in the number of the Register just received, I was sorry to notice thy *opinion*, (for such I must accept it, although stated as a fact,) viz.: that nearly all the farmers north of "Mason and Dixon's line" hold every thing in and about southern agriculture, and agricultural opinions, in supreme contempt.

This is, indeed, a grave charge, and did we not verily believe such an opinion of us to be erroneous, we should be inexcusable. The privilege that I have had of associating with some of the distinguished agriculturists in at least four of the states north of said line, emboldens me to deny it.

Thou surely cannot be aware of the esteem in which Ruffin's 'Essay on Calcareous Manures' is held with us, to say nothing of the compliments and praises (which thou calls 'unsub-

stantial food') offered to 'Arator' and other southern agricultural writers.

I have estimated as a prominent advantage attending farming, that of a freedom in good measure from that petty and narrow-minded jealousy of the success of others in the same line which so commonly attaches to most other kinds of business.

I am proud to say, that the disposition "*to do good and communicate*," as relates to successful modes of improving our practice, is, and I hope will always be, a leading feature of our craft.

I pray that national, much more sectional feelings, may never produce "supreme contempt" for the honest opinions or practice of one tiller of God's earth, wherever his lot may be cast.

Commending thee to a reconsideration of thy remarks, and more full inquiry as to our lack of fraternal regards, and if we are, indeed, alienated from our southern brother farmers, bear with us, we entreat it of thee, and with our folly as patiently as may be, and trust to kindness, persuasion and forbearance, to win us back to the bonds of good fellowship. **ROBERT WHITE, Jr.**

We receive the friendly and well-meant rebuke of our correspondent, in a better spirit than that which prompted the hasty and *too general* expression of ours, which he censures. If the words were to be taken *literally* and strictly, and without any allowance for the manner in which they were brought in, we would admit, to the fullest extent, that all the censure of our friend was deserved. But while confessing the wrong of not having mentioned, or referred to as existing, the exceptions to the rule which we stated, we must still maintain our opinion as *generally*, though certainly not *universally*, and, without any exception, true. We could present sundry striking proofs of the *very general* disregard by northern agriculturists, and agricultural journals, of southern agriculture, (even the most improved and admirable,) and agricultural opinions, which would justify our strong expression of this general opinion amounting to evincing "supreme contempt." But the evidences are not only uncalled for, but would be objectionable for very obvious reasons. But though, in the rapidity of uttering a mere incidental and parenthetical remark, we stated the general proposition, without referring to the exceptions, it certainly was not with any intention of denying or concealing them, or because of undervaluing them. On the contrary, our past volumes have exhibited, among the most valued of their contents, the communications of several northern farmers, and enlightened friends of agriculture; and their good opinion of the work we have the honor to conduct, (which is principally an abstract and exposition of southern agriculture,) has been abundantly proved in their continued support of it, and also in the excellent contributions of some of

them to its contents. And the good opinion entertained by even these few individuals, enlightened and judicious as they are, of our own labors, and their continued support, are so highly valued as to go very far to compensate for the neglect or disregard of all others of the great northern agricultural community. Besides our present correspondent, with whom we have but recently been acquainted, (and connected as reader and publisher,) we may be permitted to mention, among the few, but highly valued exceptions to the cause of neglect or contempt of southern agriculture and agricultural publications, too *sweepingly* expressed, the names of Walker, Hulme, and Vanuxem, of Pennsylvania, of Beekman and Wadsworth of New York, and of Colman of Massachusetts, who have given us highly prized evidences of their favor and approbation, and by whom the readers of the Farmers' Register, as such, have been instructed, or otherwise greatly benefited.

But still, "the exception proves the rule." While we value very highly the marks of approbation, and the long continued favor of the very few northern agriculturists or others who have bestowed them on our labors, or on southern agriculture, the existence of these few facts, and also of the few northern farmers who have visited, seen and appreciated the admirable farming, and enlightened views of improvement to be seen in some parts of Virginia, serve but to make more striking and remarkable the general opinion, (or total want of all opinion,) entertained in the north, of southern agricultural practices and opinions. It is very true that our agricultural practices, in ninety-nine cases in the hundred, are wretched and abominable; but such is also the case even in the northern states, and still better farming countries. And we of the south at least receive readily the instruction and lights of the north, (for we derive almost all our reading from the north—agricultural, and on every other subject,) while the very existence of southern publications is scarcely known to the great mass of northern agriculturists. But enough—and we will say no more than to repeat to our correspondent and friend the assurance that we highly value the few cases of exceptions to which he belongs, and that it was very far from an intention to count the approbation of such persons as "unsubstantial food." The application for which this expression was designed, was to high (and sometimes greatly exaggerated) praises of our labors and our publication, from persons who have never given any other evidence of valuing either—and who have not in any other manner aided our exertions, or attempted to advance their great objects, whether as literary contributors, as subscribers, or by using their influence to extend the knowledge and circulation of the work.

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Such praises, we cannot but rate as "unsubstantial food," and count them not much more as evidence of the interest felt by, and the sincerity of the utterers, than are the newspaper puffs of many periodicals, which can be supplied in any quantity, and of any degree of *strength*, according to order, and either upon *purchase*, or *exchange*, if not as *alms* to the begging publisher. In our case, however, we have never been indebted for praise to any of these means; for, however common the practice, or made legitimate by long usage of the trade, we never have begged, bought, exchanged, or otherwise bargained for any puff or praise, from any quarter, and we too heartily despise the practice, ever to resort to it. Whenever puffing shall be essential to the support of any publication of ours, it will sink at once.—ED. F. R.

#### ROHAN POTATO.

From the Western Farmer and Gardener.

All accounts, both in Europe and in this country, agree in stating that the increase of this potato is remarkably great. It has therefore become a prominent article of cultivation amongst the tillers of the soil. It was first cultivated by the Prince of Rohan, in the neighborhood of Geneva, and from the great returns which these potatoes made in their products, they soon attracted the attention of the agriculturists of Europe. In one instance, in France, they produced 40 fold, and in another 62 fold.

The remarks of Viscount Morel-Vinde on the nature of the Rohan are valuable, showing particularly the best method of cultivating them.

"1. The Rohan potato," he says, "keeps together its tubers round the foot of its stem, and this property permits its being earthed up as much as desired.

"2. It produces its tubers so near the surface of the earth, that, without earthing up, many of them would show themselves above ground, assume a green color, and exhibit a great want of maturity. This property shows the absolute necessity of a large earthing up.

"3. This potato has need of moisture being around the foot of the stem, the elevated position of the tubers exposing them the more to drought. It is this property which renders it indispensable to allow its large leaves to remain on the ground for the sake of the shade afforded by them.

"4. It carries flowers on almost all the stems, but it bears no apples, which may be explained from the circumstance of the large size of the tubers. The tendency of the sap constantly towards the tubers absorbs the elements necessary to the formation of apples, and deprives the plant of this mode of propagation.

"5. To form and ripen the large tubers, it requires to be a long time in the earth. It ought thus to be the first planted and the last taken up.

"6. I shall now speak of the quality of this potato, that varying according to the nature of the ground, and as often from different tastes;

but at Celle Saint-Cloud I have subjected it to various cooking and culinary processes. I have had it tasted by great amateurs of the potato; and if its quality is not superior to several fine and more succulent kinds, it is found at least to be of a good taste, sufficiently mealy, and superior to most of the kinds employed in feeding cattle or making starch."—*Edinburgh Quarterly Jour. of Agricul.*

In the Farmers' Magazine, England, there is a notice of a Mr. Kimberly, who obtained, from 60 moderately sized tubers, 24 bushels full measure—the vines growing 8 feet. Another year he obtained also a most extraordinary yield from them. It is said, that in Paris this potato is frequently exhibited of ten pounds weight. There they are cut in slices of about two inches thick, boiled well, and are pronounced very farinaceous, or mealy, and of fine flavor.

Mr. Geo. Hezlep writes to the Albany Cultivator, that from two Rohans, weighing  $11\frac{1}{2}$  oz. planted in 12 hills, three feet apart each way, he obtained in October, 175, or two bushels, heaped measure, weighing  $118\frac{1}{2}$  lbs. And this without any extraordinary pains—some manure only in the hills, and two hoeings.

Mr. Henry H. Hopkins writes from Auburn to the same paper, that a gentleman raised three bushels from one potato.

Mr. A. M. D. Robertson, from Rock River, Wisconsin Territory, states that 13 Rohan potatoes planted late, in 18 hills, after suffering much from the cut worm, produced a barrel larger than a flour barrel full, and 3 pecks over.

J. E. Ferre, of Agavam, Mass., raised from one tuber, weighing 6 oz. 34 lbs. of Rohans, being 68 fold.

It seems unnecessary to quote more examples of this kind, particularly as the above are but trifles in production from this singular species of the potato, compared with some others we cannot refrain from giving, especially as we shall shortly arrive at some well authenticated statements regarding it in our own immediate neighborhood.

Mr. Jas. J. Jackson, of Wellsborough, (Va.), says, in the Albany Cultivator, that from one potato, weighing 10 oz., with 53 eyes, he raised, the last season, 134 lbs., measuring two bushels, being an increase of 214 fold in weight; two pieces planted in a hill.

Mr. Levi Robbins, of Copenhagen, N. Y. planted 6 lbs. 12 oz., somewhat injured by frost and the grub worm, and notwithstanding these disadvantages, raised 70 bushels.

But we desire more especially to direct the attention of our western farmers to facts connected with the culture and produce of the Rohans in our own section of the union, the experience of every day more and more convincing us that it is to experiments of all kinds in agriculture in our own part of the country that we ought to look for correct information, and not generally to what answers in the east or in Europe.

We have then, without referring to the enormous yields of this potato in some parts of the west more distant from us, to go to facts within only a few miles of Cincinnati.

Mr. T. Worthington has, with sufficient accuracy for our purpose, ascertained in the cultivation of these potatoes, that their yield here is prodigious in comparison with other sorts. He pur-

chased half a barrel of them for seed, and obtained from them 160 bushels. He planted them last season rather later than they should have been, and in ground which became soon after strongly bound by hard rains; they came up for some time with very slender stems, and the ground when hoed was of course cloddy and in an unfavorable condition for their growth. Some of his neighbors saw them, and predicted bad results, yet notwithstanding these disadvantages, (the season however was favorable,) the above (160 bushels) was the produce from half a barrel: and this was not all, their size must not be omitted—their weight is from 1 to 4 lbs., (we have them in our office for inspection,) one now before us weighs 4 lbs. 8 oz. Mr. Worthington feels confident that next season, with the best culture, he can raise them to six and even eight pounds. To show that the growth of this potato is naturally large, it has, unlike some other kinds whose growth may be termed forced, no hollow in the middle—and with respect to the quality of the Rohan for the table, if it is not first rate, it seems deserving of rank among the second class, but we are not able with our present knowledge in this particular to recommend it. From 2 lbs. of the Rohan, we have obtained 4 oz. of starch, while from the same quantity of the light blue potato,  $3\frac{1}{2}$  oz. of farinaceous matter was yielded. We have to state, however, that the starch from the Rohan was not so white as from the other. Mr. Worthington would recommend two eyes being planted in a hill at three feet apart, although he planted only one eye in a hill last season. Mr. W.'s opinion as to this kind of potato requiring pretty deep hilling, perfectly coincides with the advice of the European and eastern cultivators. There is a great saving of labor both in the seed, and in the crop in the harvesting.

Upon the whole, we are of opinion that the increase of two kinds of root crops, the sugar beet and Rohan potato, would be a great improvement in this part of the western country. We think that here both will be far preferable to turnips, Swedish turnips, &c. for stock, as affording the greatest amount of nutritious food from the same quantity of land, and at the same time the most milk-producing vegetables for cattle in winter; and the potato, when distant from a profitable market, as boiled food for hogs. E. J. H.

#### SYNOPSIS OF THE CULTURE OF RICE—ON BLACK RIVER.

From the Southern Agriculturist.

On our way to Society Hill, we stopped a few days with a friend on Black River. It was not our intention to investigate the culture of rice at that time, and although we had passed over the Santees, the Sam-pit, and stayed a few days on Black River, and moreover was at the very period when this could have been best done, yet as we had set out with a specific object in view, we were loath to abandon it, and therefore left the culture of rice for some future examination, when we propose visiting all of the rice districts in the same season, investigating the several modes of culture, and by bringing them together enable our plan-

ters to judge of the merits of each, and avail themselves of such hints or details of practices as may be most conducive to their interest. But as it may be some time yet before we can perform this, we will here give the outline of culture pursued on Black River, a more detailed account of which we are promised.

**Open trench planting.**—The ground is prepared by either ploughing, harrowing and breaking with the hoe, or dug and made fine with the hoe only. This depends on the nature of the soil, and the time at command. The ground is trenched by trenching ploughs, which makes five furrows at each time. The rice is first "clayed," that is, the rice intended for seed is spread out thinly on the thrashing floor, and fine clay being mixed with water, to the consistency of white wash, is thrown over the rice, which is then stirred, and each grain becomes enveloped in a thin coat of clay. It is then fit for use, or may be laid by for a few days. This is only done when it is intended to sow in open trenches, for were it not done, the rice would float as soon as the water was put on, but being coated with clay, it retains its place in consequence of the increased weight from the moisture imbibed by the clay. The ground being properly prepared, the rice is sown in the open trench and not covered, but water is immediately put on, and the field kept in this state for about twenty days, or until the rice "floats," that is, the rice having grown so large that its specific gravity and the slight hold its roots have of the earth, are unable to overcome its buoyancy, and it is detached and floats on the surface of the water. As soon as a few of the plants are observed to be in this condition, the water is run off and the field dried. It is then hoed once or twice. When in the third or fourth leaf, (about the forty-fifth day from planting,) the water is again put on, "topping" [covering] the rice for three days. It is then drawn down until the rows of rice are apparent. In twelve days after the field is dried and hoed twice, commencing as soon as dry enough. It will now be ready for the joint flow in about thirty days.

Some, instead of drying it at the end of twenty days, merely "slacken" the water, so as to show the tops of the rice, and increase the water as it grows, so as to keep the tops of the rice merely visible for sixty days.

**Covered planting.**—The following directions are given for this: The ground being prepared as above, sow and cover the rice, put on the water until the rice is "piped," dry it, and keep it so until in the needle state, cover it with water for ten days, draw it down until you can see the tops of the rows. Twenty days after dry it, and as soon as it is enough so, hoe it as often as possible before the joint or harvest water is put on, which will be in about from thirty to thirty-five days. When the joint flow is put on, the water is kept just below a white streak which is always seen on the stalks of rice just below the ear. When fit for harvest, (which is determined by the second or third lower grains being so soft as to be mashed with the nail,) the water is let in and out for several tides so as to wash out the fields entirely, which renders it less offensive (and of course less unhealthy,) while harvesting is being carried on. The task at this time is to cut a quarter of an acre and carry out a quarter. The

quantity of seed used is two and a half bushels per acre. The usual average product is about thirty bushels per acre, the greatest average from fifty to sixty bushels. The largest quantity made, eighty bushels per acre. The usual weight of the rice is forty-seven pounds per bushel.—*En. S. AGRIC.*

#### WHAT WILL AN ACRE YIELD IN SILK?

From the Burlington Silk Record.

In 1838, M. Darcet published at Paris the 3d edition of his "Description of a healthy Coconery." In that work there is a memoir on the silk culture, written by M. Bourdon, a distinguished modern culturist, containing a variety of interesting facts and observations. In 1837, at the instance of the French government, he made a tour of inspection through the silk districts of France. He says, "In rearings regarded as of average goodness, the product per ounce of eggs is 25 kilogrammes of cocoons," (about 56 lbs.) He says moreover, that "in every ounce of eggs at least 26,000 worms perish," and that there are 40,000 in an ounce. This, it must be remembered, is the average result throughout France, as reported by an official agent so lately as only four years ago. The loss of worms, therefore, is nearly two-thirds, and yet the business continues to be the most profitable that exists in France. M. Bourdon further says, that there are cocooneries where the product of an ounce of eggs does not exceed 18, 22, and 35 lbs. of cocoons.

Now to prevent this enormous loss of worms, the most strenuous efforts of scientific culturists in France have been made. The causes of this loss are stated to be "the frosts of spring nipping the young leaves of the mulberry tree at the time of the hatching of the eggs, and to diseases by which the worms are destroyed." The evil has been cured, but not until "ten years of toilsome research" had been devoted to an investigation of its causes and its remedy—and ten years is a long time in these United States. The remedy was found in a most elaborate system of ventilation, watchfulness and care, of which incessant cleaning formed a most conspicuous item. This system was invented by Messrs. Darcet and Beauvais. It required an increased temperature, more frequent repasts, and constant renewal of the air of the cocoonery, by pumping it up into the garret, by machinery made for that express purpose. M. Bourdon confirms the natural conclusion of the reader's mind, by informing us that on this system of feeding, "the cares and attentions are multiplied; very frequent removals of the litter are absolutely necessary; the least neglect in the distribution of the repasts cannot fail to be attended with serious consequences." On the other hand, the solicitudes of the feeder are abridged, for the worms spin in about 22 to 24 days.

The results obtained from this elaborate system of feeding are as follows:

M. Beauvais got from 2240 lbs. leaves	200 lbs. cocoons.
At Faventines, 2240 "	171 "
Marquis of Balincourt, 2240* "	132 "

\* Leaves watery and not nutritious.



M. Thannaron.	2240 lbs. leaves	168 lbs. cocoons.
M. Robert,	2504 "	114 "
M. Mazade, jr.	2240 "	147 "
Misses Reina, Italy,	2240 "	240 "

The above crops were all obtained by feeding with the white mulberry.

Culturists in this country, when feeding small crops on shelving, have realized the following results :

D. V. M'Lean, Freehold, N. J., in 1838, from 2240 lbs. of leaves obtained 112 lbs. cocoons, and in 1839, from 2240 lbs. leaves 130 lbs. cocoons.

E. Montague, Belchertown, Mass., in 1840, from 2240 lbs. leaves 215 lbs. cocoons.

Besides these results, we may add the following, which are differently stated. It must be remembered that all the crops made in this country were fed upon the multicaulis.

Aaron Clapp, Hartford, Ct. in 1839, raised 50 bushels of cocoons, each producing one pound of reeled silk : he says 80 lbs. of leaves afforded him a pound of reeled silk.

M. Amans Carrier, at Rodez, in France, produced 928 pounds of cocoons from  $1\frac{1}{4}$  acres of ground : he hatched  $7\frac{1}{2}$  ounces of eggs.

M. Carlo Modena, at Vicenza, in Italy, in 1778, obtained 992 lbs. of cocoons from 26,475 lbs. of leaves ; also 55 oz. of eggs.

The loose and slovenly manner in which most of the rearings in this country have been conducted, prevents our giving the weight of leaves consumed and of cocoons produced, except in a very few instances. The careful noting down of all these things, as practised in Europe, is necessary at first, in order to reduce the silk culture to something like form and consistency. Our American culturists *must* imitate their careful precision, at least for a few years, until we can obtain some certain data on the most important points. We furnish above, the result obtained by seven European growers, specifying how many pounds of cocoons each one obtained from a ton of leaves. The Misses Reina obtained 240 lbs. It is well known that a bushel of pea nut cocoons will weigh 12 lbs. : hence these 240 lbs. are equal to 20 bushels. Now we know from repeated trial, week after week, that the clear average yield of a lot of pea nut cocoons is  $1\frac{1}{4}$  lbs. of silk per bushel : indeed it may be more, and unquestionably will be when our reelers become less wasteful. Hence the 20 bushels afford us 25 lbs. of silk.

Now we know moreover, because we have tested it by actual experiment, that an acre of multicaulis trees will produce 10 to 15,000 lbs. of foliage the first season. The second season it will very probably produce 20,000. If then, as is really the case, 25 lbs. of silk have been already obtained, annually, for years in succession, by the Misses Reina, from a ton of leaves, the fact is beyond dispute that an acre of multicaulis trees will produce foliage enough to make 100 lbs. Of that part of the question there can be no doubt : the only doubt is whether our culturists will adopt all the lights that are before them as regards improved modes of feeding, and so use this foliage as to *make* it produce all the silk it is capable of yielding. Of their disposition to do so we entertain no doubt, when they once become satisfied that the lights held up to them to

follow are not false ones. No effort of ours shall be spared to accomplish this : but at the same time our readers must assist us. They can be of immense advantage to us and to the country at large, by keeping careful accounts of how many pounds of foliage they feed out, and how many pounds of cocoons they make. We sincerely hope that this will be done the present season, and the result communicated to us for publication. Those who use our improved frames will generally do so, and we shall do it ourselves. Knowing already the quantities consumed and yielded in Europe, we have a distinct mark set up for us to equal or surpass ; and it will be strange indeed if our fine climate does not enable us to exceed the very highest European crop.

The large yield of 240 lbs. of cocoons from a ton of leaves is made with uniform regularity in all of the numerous cocooneries of the Count Reina in Italy ; and this result, though much exceeding the product of all other culturists, has nevertheless been regularly produced every season for a number of years. It is in fact equal to 100 lbs. of silk from an acre of ground. Four acres of multicaulis trees in this country would therefore become an independence to the father of a family. Nay, even one acre, producing this result, would be a fortune to tens of thousands of families. Most firmly persuaded are we that this will be found to be the case ; and that thousands of worthy, industrious men and women, with families dependent on them for support, who have been prostrated by the events of the last two years, will find this silk culture one of the surest sources of respectable support and comfort. How firmly, then, should all who think so, stand up in its defence, and persevere to the utmost of their means in implanting it securely on our soil. No matter how unnatural the opposition may be—and it is *truly* unnatural—yet perseverance is the word, and the blessings of thousands will descend with grateful acceptance on the heads of those who succeed in overcoming the obstacles which surround the business, while the additional satisfaction will be experienced of freeing our happy country from its servile dependence upon the fields, and filatures, and looms of foreign countries.

#### THE LONG CONTINUED ACTION OF CALCAREOUS MANURES, AND PARTICULARLY IN PREVENTING RUST IN WHEAT.

To the Editor of the Farmers' Register.

The following facts, communicated to me a short time since by a farmer of Augusta county, may prove interesting to the readers of the Register, especially those of the marl and lime-stone regions of the state. The facts are these, that in a field of wheat (the last harvest) which was very much injured by the rust, two small spaces escaped entirely, the straw being bright and clean and the grain plump. On one of these spaces a lime-kiln was burned in the year 1810 ; since which time the field had been frequently cropped. On the other, the ashes from a distillery, had been deposited for several years ; the distillery, however, had not been in operation for 7 or 8 years. These spaces were, in all respects, treated

as the other parts of the field, and their being surrounded on all sides by wheat very badly rusted shows conclusively that the lime and ashes were the sole causes of the difference.

I hope the foregoing facts will be sufficient to induce some trials of the efficacy of lime and ashes in preventing rust, by those who have the means of doing so; the end in view is of sufficient importance to justify the labor and expense of many experiments. The quantity of lime and ashes, in the example related above, is much greater than can, or perhaps ought to be applied in ordinary cases, but the lime operated effectively after 30 years, and the ashes after 7 or 8. A much smaller quantity applied annually might produce the same effect.

As lime is an essential ingredient of good wheat soils, may not the many failures of the wheat crop be owing, in some degree, to the absence of lime\* from most of the land cultivated in that crop?

The efficacy of lime, on what is called limestone land, is strikingly illustrated by the accidental experiment I have detailed above.

Lexington, Va. Feb. 20, 1841. WM. TATE.

P. S. In one of the volumes of the Transactions of the Philadelphia Agricultural Society, (I have not the work by me, and do not recollect the volume,) there is an interesting article on the causes of rust, which, if it has not already been published in the Register, I have no doubt many of your readers would be obliged to you for publishing.

#### OF THE SOIL MOST SUITABLE FOR APPLE TREES.

From the Western Farmer and Gardener.

The successful cultivation of the apple depends very much on the suitability of the ground they are planted in. The size and flavor of the fruit, the general health and duration of trees are most commonly the result of good or bad soil. Climate and situation also affect both trees and fruit; but not in the degree in which the same are affected by the qualities predominant in the land. Of all the different descriptions of soil to be met with, that of a soft hazel loam, containing a small portion of sand, seems to be most congenial to the apple generally. In such soil the tree is seen to flourish longest, is most productive, and remains freest from disease or attack of insects. A great depth is not requisite; eighteen or twenty inches deep being quite enough, provided it be on a dry subsoil of gravel or loose rock. If the bottom be wet, the trees should be planted high, and every means taken to drain the ground. A wet bottom of gravelly clay should be avoided if possible.

Deep rich soils in sheltered situations are not the most proper for the apple, for it is often seen that apple trees succeed well in any kind of loam, though it be not more than one foot in depth, so as the bottom is sound and dry, the roots take on extensive horizontal range, the young wood is always of more moderate growth,

and better ripened than when roots strike deep into the ground.

Although local circumstances often control the works of the planter, compelling him to fix on a site where the soil may not be exactly what is recommended above; he must, in this case, endeavor to make the soil by trenching, draining, and by addition of the qualities wanting, bring it as near to the standard as possible.

*Situation and aspect for planting apple trees.*—The situation of an orchard should neither be in the bottom of a narrow valley, nor on the top of a hill: in the first, the young wood is never so well ripened, the buds are often too early excited in the spring, and there frosts are always more intensely felt: in the second, fruit-bearing trees are always too much exposed to winds. The most desirable site is the side of a hill which slopes gently to the south east, that being the most sheltered situation in this western country. But when the violence of a west wind is broken by an intervening rise of ground, a south-west aspect has been found equal to any.

#### FROZEN WELL.

Near Owego occurs this apparent contradiction of Nature's laws, which is thus described, by a correspondent, in *Silliman's Journal*.

The well is excavated on a table of land, elevated about thirty feet above the bed of the Susquehanna river, and distant from it three-fourths of a mile. The depth of the well, from the surface to the bottom, is said to be seventy-seven feet; but for four or five months in the year, the surface of the water is frozen so solid as to be entirely useless to the inhabitants. On the 23d of the present month, (Feb.) in company with a friend, I measured the depth, and found it to be sixty-one feet from the surface of the earth to the ice which covers the water in the well, and this ice we found it impossible to break with a heavy iron weight attached to a rope. The sides of the well are nearly covered with masses of ice, which, increasing in the descent, leave but about a foot space (in diameter) at the bottom. A thermometer let down to the bottom, sunk 38° in fifteen minutes, being 68° in the sun, and 30° at the bottom of the well. The well has been dug twenty-one years, and I am informed, by a very credible person who assisted in the excavation, that a man could not endure to work in it more than two hours at a time, even with extra clothing, although in the month of June, and the weather excessively hot. The ice remains until very late in the season, and is often drawn up in the months of June and July. Samuel Mathews drew from the well a large piece of ice on the 25th day of July, 1837, and it is common to find it there on the 4th of July.

The well is situated in the highway, about one mile northwest of the village of Owego, in the town and country of Tioga. There is no other well on that table of land, nor within sixty or eighty rods, and none that presents the same phenomenon. In the excavation, no rock or slate was thrown up; the water is never affected by freshets; and is what is usually denominated "hard," or limestone water. A lighted candle being let down,

\* Essay on Calcareous Manures. P. 61, 1st edition.

the flame became agitated and thrown in one direction at the depth of thirty feet, but was quite still, and soon extinguished at the bottom. Feathers, down or any light substance, when thrown in, sink with a rapid and accelerated motion.

*Owego, Feb. 26th, N. Lat. 42° 10'.*

Prof. Silliman, in attempting to solve this extraordinary and difficult problem, observes:

At the depth of more than sixty feet, the water ought not to freeze at all, as it should have nearly the same temperature of that film of the earth's crust, which is at this place affected by atmospheric variations, and solar influence, being of course not far from the medium temperature of the climate. Could we suppose that compressed gases, or greatly compressed atmosphere were escaping from the water, or near it, this would indicate a source of cold; but as there is no such indication in the water, we cannot avail ourselves of this explanation, unless we were to suppose that the escape of compressed gas takes place deep in the earth, in the vicinity of the well, and in proximity to the water that supplies it. Perhaps this view is countenanced by the blowing of the candle at the depth of thirty feet, blowing it to one side, thus indicating a jet of gas which might rise from the water as low as at its source; and even if it were carbonic acid, it might not extinguish the candle, while descending, as the gas would be much diluted by common air; and still, in the progress of time, an accumulation of carbonic acid gas might take place at the surface of the water, sufficient to extinguish a candle.

#### HEAVY BERKSHIRE HOGS.

From the Kentucky Farmer.

[Here are some facts that tell well for this popular breed of hogs. If the breeders in various sections of the country would report the *facts*—kind of keep, age, &c.; in reference to the various breeds of animals, the country would soon be able to estimate the improved breeds by an intelligible standard. There has been a vast deal too much puffing and blowing about all the breeds in certain agricultural papers. It is time these humbugging appliances were laid aside for the more honest and more useful statements of ascertained truths. If ever this paper sinned in this way hitherto, it will sin no more. We are devout believers in the superiority of various breeds of domestic animals and shall use every legitimate means of furnishing the public those grounds of enlightened opinion which will tend to their greater diffusion; but from this day forth, be it fairly known to all concerned, we shall admit no article in this paper which is a mere puff or advertisement in disguise, of this, that, or other breed. But we shall feel at all times thankful for the facts on which a preference for any breed is based by the writer.—E. D. KEN. FAR.]

*Mr. Editor.*—If you think the following facts in relation to some of the weights of our Warren county hogs are worth publishing in your valuable paper, you are at liberty to do so.

Mr. Geo. Deyche slaughtered a lot of 40 half blood Berkshire hogs 18 months old, with no grain during the summer months, their average weight net was 304 lbs. Mr. Steddom's

lot of 38 three quarters and seven eighths Berkshires 16 months old averaged 343 lbs. net. All his choice pigs having been selected for breeders, fed solely on grass during summer. Mr. Ebenezer Hathaway's lot of 10, half Berkshire, at 20 months old averaged 373½ lbs. net. Mr. Hathaway gives it as his opinion that it cost him no more food and attention to bring his hogs up to the above weight than it did his old stock to 250 lbs. at the same age. Mr. Gallagher's lot 65 hogs half Berkshire, from 14 to 18 months old, fed solely on grass during summer, averaged 309 lbs. net. Mr. Longstreet's lot of 55 head averaged net 318 lbs.—all the choice pigs were sold for breeders; no grain until he had harvested his oats and wheat, then run in the stubble, &c., were from half to three quarters bred Berkshires, with a cross of the Irish Grazier, &c. Mr. Tache of Springborough slaughtered a barrow 30 months old, half Berkshire, gross weight 900 lbs. net 814 lbs. Mr. Samuel Irons who denied the further improvement of his hogs, being prejudiced against not only Berkshire hogs but Durham cattle, &c., was induced by the persuasion of his son to send a sow to his Berkshire boar, selecting his poorest with design evidently to disgrace the stock, the sow had nine pigs; Mr. Irons sold two of the best for breeders, the other seven at 20 months old, averaged net 435; his old stock, with *precisely* the same food and attention, as they were fed together, did not average as much by just 102 lbs., although six weeks older on each hog. This may seem to border on improbability with some, it is nevertheless true, as can be made to appear. Mr. Lefevre slaughtered a lot of 5 half Berkshire pigs farrowed 17th March 1840, average at 253 lbs. net; one weighed 290 lbs. Dr. Keever's lot of 6 or 8 March pigs (the choice ones sold for breeders, averaged 260 lbs.)

The writer of this article bred a big thorough-bred Berkshire, got by Mr. Lossing's imported boar Newbury, out of sow bred by the society of Shakers near Albany, N. Y., that at 5 months and 5 days old weighed 185 lbs. gross. M. B.

*Lebanon, Ohio, Jan. 16, 1841.*

#### AN ACCOUNT OF THE METHOD OF PLANTING AND MANAGING PEACH ORCHARDS,

As practised in New Jersey. By T. Hancock, Nurseryman, Burlington, N. J.

From the Magazine of Horticulture.

The peach tree is very extensively cultivated throughout New Jersey, and large quantities of the fruit are annually sent to the New York and Philadelphia markets. Since the opening of the communication by rail-road between these two cities through the interior of the state, it has been the means of greatly increasing the number of peach orchards, and many large and extensive plantations have been made. Within a few years, from the increased facilities of rapid and safe transportation by rail-road, between Boston, Providence, and Stonnington, the eastern cities have been supplied, to a very great extent, with New Jersey peaches, and the opening of such a market has induced cultivators to plant more extensively, in order to supply the demand. The crop proves a very profitable one for the light soils of a portion of the state, as the trees flourish

very well where the land is not sufficiently good to produce but a very few bushels of corn to the acre.

If the few following remarks, in relation to our mode of cultivating the peach, will interest your readers, you can give them a place in your pages. I have an orchard of some extent, and have, in some seasons, gathered a very large crop.

When it is intended to plant out a good orchard of trees, we generally select an elevated position, entirely unprotected by any timber or shelter of any kind: if a situation can be selected near the bank of a river, the crop is more certain, as the trees better withstand the frosts, which occasionally do much damage.

Plough, and put the land in good condition for corn or vegetables, and plant the trees twenty feet apart each way. Continue to till the land, taking off a crop of peas, beans, potatoes, or something that does not grow too high: wheat, rye, and oats are very injurious, and should not be planted. The land must not remain without tillage, as the trees would soon be injured; indeed nothing will kill a fine peach orchard sooner than to let it lie in sward.

The trees should be two years old on the stock, (from seed,) and one year from the bud, (the year after budding.) This is considered as the best age for transplanting. If the water stands near the surface of the soil, or if the land has springs near the top of the ground, I should not deem it advisable to plant with the expectation of very certain crops. I have lost two orchards planted in this manner, while, in an adjoining field, where the land, or a part of it, was high, with a dry subsoil, the trees flourished, and produced abundant crops.

Light sandy soil, or light loam, we consider the most preferable for planting out peach orchards, and I should judge, that on many of the elevated knolls, in the vicinity of Boston, the peach might be cultivated to good advantage, particularly the earlier varieties. It is at least well worthy of trial. Yours, respectfully, T. HANCOCK.

*Burlington, N. J., Jan. 1841.*

We have already noticed Mr. Hancock's nursery, and given some account of his peach orchard, (Vol. V., p. 365.) In the season of 1839, when we passed through Burlington, the peach trees were breaking down with the heavy crops. Mr. Hancock's trees were literally loaded; and so fast did they ripen, that the ground under nearly every tree that we noticed was covered with the fruit. The orchard contained about seventeen acres, and was covered with healthy trees, and the crop was estimated at two thousand baskets (about fifteen hundred bushels,) which commanded one dollar and upwards a basket, in the New York market. The land was a light sandy loam, and would not produce, as Mr. Hancock informed us, five bushels of corn to the acre, unless very heavily manured. The ground was not planted at all when we saw it, but it had been tilled with the cultivator, to keep the surface free from the growth of weeds, &c. The trees do not make a vigorous growth, and consequently do not need but little pruning.

The great error in cultivating peach trees, in New England, has been in planting them in too rich soil, and encouraging them to make a rapid and vigorous growth: the trees, in consequence,

are overtaken by the cold weather, and the severe frosts, of the early part of winter, before the wood is fully ripe, destroy the young fruit buds, oftentimes the young and tender shoots, and occasionally the trees are killed completely down to the roots. The very opposite course should be pursued: the trees should be set out on a light soil, and not encouraged to make a vigorous growth; the young wood will then get fully ripe, and hardened before cold weather; the frost will have less effect upon the buds, and, unless the situation is very unfavorable, and subject to late frosts in the spring, the chances are that the trees will not be injured, and will produce good crops.

The cultivation of the peach has attracted more attention, within a year or two, in the vicinity of Boston, than for some time previous: to those who are planting trees, we would recommend a perusal of Mr. Hancock's communication, convinced, from the success which has attended his cultivation of the trees, that the information which he has given will be found the result of experience upon the subject.—*Ed. Mag. Hort.*

#### THE SUGAR BEET AND WHITE CARROT. MR. RONALDSON'S IMPORTED SEEDS AND IMPLEMENTS.

*Philadelphia, Feb. 16, 1841.*

*Dear Sir.*—Your Register of the 13<sup>th</sup> shows your labors are not lost, and that of the seed you have sown, some has fallen on good ground. The more the sugar and other beets are cultivated the better their value will be understood, especially if they suit our warm southern districts. I asked a lady, to whom I had given some sugar beet seeds, and persuaded to sow a large quantity of them, (the farm was on the western shore of the Chesapeake,) if the negroes stole them. To which she replied "Oh, no, no," and I rejoined, "I am sorry for that, as it is a proof that though you have quantity, they must not be of good quality." "By no means," was the reply. "they, (the negroes) have no occasion to steal them; they would do it, but we give them beets, and some of them are fond of roasting them. We have to feed them, and beets go in for a share in doing this. No, no,—our negroes shall not have occasion to steal beets, that they may eat them, they will eat, and beets are cheap, but I do not wish them to know this."

My object in writing is to inquire, (for I have no memorandum of what I sent,) was white carrot seed amongst what were sent to you; if so, have you learned what was the success in your warm climate? They have grown to a surprising size here, are good for the table, and carrots have always been celebrated as fine feeding for horses. This white carrot is to the common carrot, what the mangel wurtzel is to the other beets. It grows considerably out of the ground; and an observing friend of mine thinks, in some circumstances, may give a heavier crop than beets. If so, then it would be of more value from the circumstance of the carrot being far the most solid of the two.

I sent you a small pamphlet noticing the things I had brought from Europe, and giving

the reason for bringing them. Do you think spring barley on good land would be a paying crop with you? Of it, the oats, sugar beet, and rye grass, I brought considerable quantities, and presume all of them are to meet a market this spring. The red wheat, the quantities were but small, a sack containing 4 bushels of the "golden drop," has been lost. This, independent of the value, I am sorry for, as it is amongst the reds I have been looking for that which is not to be so subject to blight or mildew as some we at present have.

While we were speaking of beets and carrots for the table, we might have noted that vegetables and fat meat are proper associates; the one is an accompaniment that the other wants, and together are healthy, nourishing, and more fattening than pork or greasy meats by themselves.

Advise your readers to follow the practices of the farmer in other countries; you can tell them that it is not by accident they have fine oats, wheat, barley, &c. It is the result of great care and skill. If our farmers exercise the same means, the seed of the country may be improved, and good imported be preserved from degenerating.

Yours, sincerely, JAMES RONALDSON.

P. S. With respect to sales, I leave every one to judge the propriety of buying expensive seeds. Of my own opinion, they have evidence in my taking trouble to place them within reach of farmers.

[The pamphlet referred to above was received; the notice at its end will be copied below. It is scarcely necessary for us to repeat here that Mr. Ronaldson's efforts to introduce new and choice seeds, and agricultural implements, have been induced solely by the desire to aid agricultural improvement, and promote the public good. We regret that circumstances, beyond our control, prevented this notice appearing in the February number.]

In answer to the inquiries, we have to state that there were no seeds of the white carrot among those which Mr. Ronaldson sent to us last spring for gratuitous distribution. Barley is sown nowhere in Virginia except on the celebrated Gloucester low-grounds; and even there, that crop had been abandoned by all except John Tabb, esq., of Whitmarsh.—E. F. R.]

#### *To the farmers of the United States.*

The subscriber has imported, and for sale, a small quantity of Oxford White Prize Seed Wheat; Pomeranian Red do.; Golden Drop do.; Scotch and Chevalier (spring) Barley; Hopeton Oats; English Rye Grass; Don Potatoes; Weed Hooks, (a specimen) to make by; a Mill for family use, for the inspection of tradesmen and farmers; Great Northern Rye; French Sugar Beet. And has in the ship *Levant*, daily expected, Calico Potatoes, and Forty-fold do.; Scots Rye Grass; Subsoil Plough, chain and draft bars, for inspection, &c.; Weed Hooks, do.; Bull Ring, do.; Safety Lamp, do.; Iron chairs, for sale and inspection.

Neither expense nor labor has been spared to get all these things good of their kind. This will considerably enhance the price, but it is in farming as with other business, the trouble and expense has to be encountered, otherwise the experiments would never be made. The Sugar Beet is now ascertained to be a valuable acquisition, and if any one of the other articles shall prove equally advantageous to our agriculture, it will amply repay the trouble and expense that has been bestowed on the whole.

It is proposed to accompany these seeds with a brief notice of their respective properties, &c. Gentlemen having occasion to write to the subscriber, are respectfully requested to pay the postage.

JAMES RONALDSON,  
No. 200, South Ninth street, Philadelphia.

#### LIME.

*From the Farmers' Gazette.*

In the Geological Appendix to Cleaveland's Mineralogy, it is stated that in the alluvial region of North Carolina "a bed of limestone and shells commences about 20 or 30 miles from the border of the primitive [formation]; to which it runs parallel, through S. Carolina, Georgia, &c." The border of this primitive formation crosses the rivers near the first falls; that is, not far above Fayetteville, Cheraw, Camden, Columbia &c, and of course the bed of shells and limestone referred to by Professor Cleaveland runs nearly parallel with a line drawn through these towns and about (or more probably as we suppose somewhat more than) 30 miles below. To the great reproach of the states through which this bed runs little has yet been ascertained as to its purity, or its extent and depth. A specimen from the neighborhood of Darlington C. H. was analyzed by the late Dr. Cooper and found to be marl; but the extent of the bed is not known. About 20 miles below Darlington C. H. near Jeffries' creek, where it is crossed by the road leading to George Town, is a bed of limestone, which, by burning, furnishes lime that answers for mortar. In other parts of Marion district, on the same side of the river, limestone has been found, and the Pee Dee runs across several beds of it between the mouth of Jeffries' creek and the mouth of Lynch's creek.

These facts would seem to indicate that lime may be obtained so near the Pee Dee as to be available for manure on lands near the river. The reason why the beds of limestone referred to have not hitherto attracted more attention is that the value of lime as a manure is not understood by our planters. We have not turned their attention to it ourselves because we were not aware, until recently, that the beds were as extensive as we now learn they are. We shall henceforth, from time to time, occupy some space in our columns with the subject. This week we give one article of some length and two shorter ones containing facts suited to inquirers. Read them.

The same bed of limestone and perhaps marl, may doubtless be found on the Santee and Cape Fear, as well as probably on Lynch's Creek, Little Pee Dee and Drowning creek. In most of the intervening country it may be too far below the surface to be dug up with profit. Marl has been found on the Santee.

## REMEDY FOR KIDNEY WORMS.

From the Maine Farmer.

I cured swine of the disease called "kidney worm," by making an incision with a knife, on each side of the back bone, and applying spirits of turpentine to the wounds and along the small of the back. It may also be cured by giving red pepper in their food; taken in season it readily yields to treatment.

## ESSAY ON THE CULTIVATION OF TOBACCO, AND THE MANAGEMENT OF THE PLANTATION.\*

*By a Maryland Planter.*

From the American Farmer.

The illustrious Thomas Jefferson, in his Notes on Virginia, in making a comparison between the culture of tobacco and wheat, has remarked, that the culture of the former "is productive of infinite wretchedness. Those employed in it are in a continual exertion beyond the power of nature to support. Little food of any kind is raised by them; so that the men and animals on these farms (tobacco plantations) are badly fed, and the earth is rapidly impoverished."

These remarks are applicable, in many instances, to the management of tobacco plantations of the present day. Many planters make every exertion to raise all the tobacco they can, without paying proper attention to any other crop. In the management of a tobacco plantation, such a course should be followed, as will produce the greatest quantity of food for animals, with the least labor. Attention should be paid to the growing of artificial grasses; for they not only furnish food for animals, but they likewise make manure for the renovation of the land made poor by the culture of tobacco. Therefore, a planter who has swamp land, ought to make every exertion to reclaim it, and a more useful crop to him, he could not put in it than a crop of timothy. Even if a planter has no swamp land, he ought to put some of his upland in timothy, or some other of the longer grasses. It is true he should always have all the arable part of his plantation set in clover or some other of the grasses, except the part cultivated in corn and tobacco. That is, clover should be sown to improve the land, and ought not, unless in the richest spots, to be cut off. Besides, clover cannot always be depended on for hay, for if the season should not exactly suit it, it will not grow high enough to be cut and saved, whereas it is not so much so with the other grasses.

The growing of wheat, rye, and oats also, furnishes food for men as well as animals, but a crop of small grain interferes materially with a crop of tobacco, particularly at the time of harvesting the former. About this time the crop of tobacco is in most need of hoeing and ploughing; grass at this season grows rapidly, and by dividing the labor between the two crops, both suffer, the grain is poorly taken care of and the fields of tobacco frequently become set with grass like a meadow. A crop of tobacco is never so good as it would have been, if permitted to get in the grass shortly after the plants have been trans-

planted. Indeed I have seen some fields of tobacco entirely ruined by having been in the grass; although hoed and ploughed, the land had become so full of the litter from the grass and its roots, that the tobacco plants never would grow afterwards. So that in cultivating of tobacco the greatest care should be taken to prevent the crop from getting in the grass. I have always thought, that where a planter looked to his tobacco crop for his profits, if it was not for the making or raising of provender for his live stock it would be much better for him to raise no grain except corn. As a plantation cannot be carried on without animals on it, it becomes necessary that some small grain should be raised. It must be kept in mind, that I am not writing about a mixed crop, where tobacco and grain might be both looked to for the profits of the plantation, that is, where there might be a certain quantity of grain, as well as tobacco raised without the one interfering with the other. I am writing as if a crop of tobacco was always the more profitable crop, and recommending such management on a plantation as will obviate as far as possible the remarks of the illustrious man quoted at the beginning of this essay.

In Prince George's county, Md., where the cultivation of tobacco is brought as near perfection as in any other part of the world, a well managed plantation is conducted in the following manner (so as to improve the land and counteract the tendency of the tobacco crop to impoverish it.) The land that has been worked in corn and tobacco during the year, is in the fall sown in wheat or rye, or a part kept for oats; in the ensuing spring the whole is put in clover. The grain and clover is plastered in April. By this mode of management a planter has fresh fields out of clover every year for corn and tobacco. The plantation of course is fenced in such a manner as to give the requisite number of fields. During the year there is as much manure made as can be, without its interfering with the crop of tobacco. The manure is used on parts of the tobacco field that will not so readily improve by the use of clover and plaster. By this manner of management, lands that are adapted to clover and plaster, are improved and kept in a state of great fertility.

It is almost useless to say, that all agriculturists should make and save all the manure they can. Yet in the cultivation of tobacco there is a peculiar necessity; for tobacco grown on land that has been cultivated the year before it is put in tobacco will, if sufficiently manured, bring tobacco that will cure finer, and consequently, be worth more money when carried to market. Tobacco to cure fine must grow rapidly after it is planted, which it will not do if there is much litter in the ground (B.) Lands taken out of clover and put in tobacco, frequently have so much litter in them, that the tobacco grows very little until September: consequently the tobacco has not time to ripen, but if it should, it will have so much juice and be so late in the fall, that it will cure a dark color, and will be such as is not much in demand in foreign markets (C.) Whilst I am writing on the advantage of saving manure on a plantation, I will give the management of one of my neighbors, as the saying is, when he commenced the world. His plantation contained about fifty acres of land, about fifteen of which

\* See Note A.

were swamp. The balance consisted of north hill sides, and not more than two thirds of them could be cultivated, and even that little had been worked down so that it would grow nothing but sedge. He had two slaves besides himself. He went to work, reclaimed his swamp land with a great deal of labor, and divided his plantation into two shifts. He then commenced cropping by putting either shift of meadow alternately in corn. During the summer and fall he had all the weeds and grass that grew about his ditches and fences, or any other place where they could be had, cut and hauled in a heap to rot for manure. In the winter his cattle were sheltered and penned and also during the summer they were penned at night. In short, he saved in every way all the manure he could. In this manner he made manure enough for all the land which he cultivated in tobacco. He did not make any kind of grain but corn; for whilst he had one part of his land in corn and tobacco, he had to keep the other for a pasture for his stock. Thus he made his swamp land grow corn for his family and provender for his stock, and at the same time furnish manure to enrich his worn-down upland. Such parts of his swamp as were too wet for corn he kept to grow branch grass. These places furnished him with hay. His plantation, as I have said before, was too small for him to raise small grain, so he could sow no clover nor any other kind of grass. If he had been so situated as to have grown timothy, how much better he might have carried on his manuring system; but even as it was he soon became famous for his nice crops of tobacco. So much so, that I have known him frequently to sell his crop of tobacco for two or three dollars per hundred weight more than his neighbors. He has frequently sold it before it was carried to the house. One great cause of the fineness of his tobacco, was his manuring the land with well rotted manure. It is true he is a nice person in curing and packing tobacco. But it may be set down as an incontrovertible fact, that unless tobacco grows on suitable land, and is properly managed before it goes to the house, it will not cure of a nice color or make what is termed fine tobacco. Well, by the management of my neighbor, as here given, he has maintained his white family, and reared a considerable family of slaves, (for one of the slaves as before mentioned was a female.) From fifty acres he has enlarged his plantation to between two and three hundred acres, on which he has at present four fine tobacco houses. When he first commenced the world, he cured his tobacco in a pen, rudely constructed of poles and forks, and covered with marsh grass. I have thus given the management of one who ranks high as a planter, not that he would not have sown grain and clover if he had had sufficient quantity of land to have done so, but to show what may be done on a plantation by manure. Any planter, whose plantation is adapted to the growth of clover, should by all means grow it; for it not only improves the land, but makes such luxuriant pasture for stock. There are lands that are too poor to grow clover. My neighbor's management, especially where tobacco is depended on for the principal crop, ought to be followed closely, for it is only by manuring that this kind of land can be made to grow tobacco.

There are various opinions among planters about the best time to plough up land that is set in clover that is intended for tobacco. Some think the fall of the year best, others think the spring the best, because the land being exposed during the winter to the hard freezes, loses some of its fertility. My own opinion is, that land that has been pastured closely should not be ploughed up out of the clover until late in April, and the stock should be kept off the clover from February, so as to permit it to grow two or three inches high. Clover, in a young and growing state, turned in by the plough, soon rots and considerably improves the land.

Land broken up late will require but one more ploughing before it is laid off for to make the tobacco hills; whereas, if it is ploughed up early in the spring it will be necessary to plough it over twice before the tobacco is planted. When land that is intended for tobacco has a great deal of litter on it, I think it best to break it up, either in the fall or early in the spring. I always, when my tobacco land is rich enough, cut the clover for hay if I can do so, if not, I try to pasture it closely; for, if the land should not be quite as rich as it ought to be, the clover hay furnishes manure which goes back to it. For, as I have before remarked, tobacco will not grow quickly on land that has much litter in it. (D.)

A planter, in laying off his tobacco lots, should select such parts of his plantation as are adapted to the growing of fine tobacco: all light soils are of this description. Almost any soil may be said to be adapted to the growth of tobacco that will grow it quickly. Tobacco that grows off immediately after being planted is soon ready for the house, and the consequence is, it will with proper attention cure good. (E.)

I shall close my remarks on the management of a tobacco plantation in as few words as possible. In the first place, raise such crops as require the least labor for the support of the men and animals on it. In the next place, save all the manure you can; keep no more stock than is necessary for the use of the plantation—particularly horses, for a few well fed horses are of more use than a host of ill fed, half starved things. Suffer no manure or tobacco stalks to lie about your barn sills, when your land is in want of manure. Try and make corn enough for your own use. Keep the plantation in good fences.

Having made the foregoing remarks on the management of a plantation where tobacco is the only crop made for sale, I shall now proceed to make such remarks on the cultivation of tobacco as I think are calculated, if followed, to produce a good and fine crop; and in making my remarks, I shall treat the subject pretty much as if writing for a person unacquainted with the manner of growing tobacco.

I shall begin by giving directions how to choose suitable land and places for beds. The best situation for a plant bed that will grow plants early is on a hill side, having a slope towards the south, and if the land suit, the bottom or foot of the hill side is best. This situation fully exposes the bed to the 12 o'clock sun, and keeps off the north-west winds, which are frequent and cold during the spring months. I always select places for beds on the margin of running streams if the land suits. The running water keeps the tobac-

flies away on that side, and furnishes water to put on the bed in very dry weather. I have frequently watered tobacco beds with great advantage. The water can be thrown over the beds a considerable distance by means of any thing in the shape of a common scoop with a long handle. All the parts of a bed that can be reached by the water thrown out of the scoop are soon watered. The part that cannot be reached in this manner, can, as the water is convenient, be soon watered by taking the water out of the branch and carrying it and putting it over the bed. Swamp beds may also be watered in dry weather, and the plants made to grow much faster in this manner. (F.)

In choosing land for a tobacco bed, a planter should be careful so as not to take that which is likely to *sponge*—that is, land that dries quick after a rain; for, in this kind of land the tobacco seed will not come up so well, as the ground very frequently dries below the seed after they have sprouted, and consequently kills them. The best kind of land is that which is well covered with vegetable mould.

Almost any land or situation would answer very well for beds if it was not for the tobacco fly: hence the great importance of choosing places for beds where the flies are not so likely to eat. Flies frequently eat worse in some places than they do in others. I have found them to eat worse in small pieces of woods where beds had been sown in succession for a number of years. They are not so apt to eat in places, distant from other places, where beds have been sown or tobacco has been grown. I have always found the first situation that I have mentioned the best, on account of flies; that is, a place not exposed to the northeast or northwest winds. It is a fact that has been long known to tobacco planters, that the flies eat worse during the prevalence of cold northeast winds, than at any other time: hence they do not injure beds in warm so much as they do in cold situations. Another thing is, the plants grow faster in warm places, and are sooner out of their way. As yet, I know of nothing that will prevent flies from eating when once they have gotten in a bed, nor do I know of any thing that will kill them. Many experiments have been tried, but with little or no success. I have known persons to sow sulphur on their beds. Others have sprinkled over them the juice of common elder leaves. Some I have known to sow rye flour on their beds, under the impression, that the flour, by forming an incrustation on the plants, prevented the flies from eating. Some suppose that keeping the beds covered with pine brush keeps the flies away. If any covering is of any advantage, it is a covering of well rotted stable manure put on very carefully so as nearly to cover the plants, without covering them entirely up. I have found some advantage from enclosing the beds with a wating of pine or cedar brush. This kind of fence around beds, whilst it fences them in from the intrusion of stock, prevents in some measure the flies from getting in them from adjacent lands. Some have supposed that a tight plank fence around beds would prevent flies from getting in them, especially if the plank was tarred: as this mode would be attended with considerable expense as well as labor, it is not likely to be adopt-

ed even if found to be a preventive. In very large pieces of woods, the flies are not so likely to injure plants. But at the present day the woods are so cut down that many planters have no such places. After all the experiments that have been tried, with respect to flies destroying tobacco plants, the situation of the bed has been found to be of more consequence than any thing else; that is, places where the flies are not likely to be. I have been rather tedious on choosing suitable places for planting beds; for I consider, that upon these in a great measure depends the successful growing of a tobacco crop. (G.)

Almost any kind of soil or situation might be made to grow plants, were it not for the flies. These little insects are the greatest obstacle to the culture of tobacco. If it was not for them, the cultivation of tobacco would be as successful as any other culture.

The best and surest time to sow plant-beds in upland, is about the middle of March. Beds sown at this time will produce more plants, and require less picking or weeding to keep the grass and weeds out. There are several objections to the custom of sowing seed in the winter months. One of them is, if there should be a warm spell of weather shortly after the seed are sown, they will come up too soon and are likely to be killed by hard freezing weather. Another objection is, the beds, from having been prepared too early, become so hard before the warm weather commences in earnest, that the plants will not grow kindly. The plants also frequently come up in a sickly state, and very often remain so. Whereas, beds that are sown in March, from having been lately prepared, grow the plants off quickly. The seed comes up quickly and in a healthy state, and the plants are not injured by drought, as much as they would be had the beds been prepared in the winter. The best time to sow lowland beds is about the first of April. (H.)

In preparing of plant-beds, it has been the custom from time immemorial to burn them over with brush or wood. This no doubt is the best way where it can be done. It certainly is best to burn a place that has not been used for a plant-bed for several years before. But a bed that has been sowed the preceding year, will grow plants without being burned again. A planter who is scarce of stuff to burn his beds with, many obtain a great deal of briers and brush by clearing up early his land intended for corn and tobacco that year. I have frequently burned beds with briers and leaves. Briers can be put in a cart with a pitchfork and put over the bed with the same. Beds, before the seed are sown, should be well pulverized and cleared of all root or other litter. When sowing the seed it is best to sow one half the seed intended for the bed, and then rake them in the ground. The other half of the seed should then be sown across the way the others were sown, and the bed then *trod* or *patted*. By this mode of sowing seed the bed is prepared for dry or wet weather; that is, should the weather be dry the seed raked in will come up; if the weather is wet both sowings will come. The surest way to have plants is to sow plenty of seed in a bed. It is true, beds will be better with a certain quantity of plants in them but as plants are liable to be destroyed in so many ways, it is surest to sow *thick*. A great many plants are destroyed by



picking the grass out of the beds. Besides, thick sowing is a great security against the flies. Beds that are thinly set with plants are soon cleaned when the flies get in them; whereas, beds thickly set may be considerably eaten by flies, and yet plants enough left: hence the trite saying "sow some for fly, and some for I." I have known persons to miss planting their crop of tobacco by not sowing seed enough in their beds; but I never knew one to miss by sowing too many. Beds that have too many plants in them can be raked and the plants thinned. This has for a long time been customary. A rake for the purpose is soon made. I have made the teeth with twenty penny nails.

Plant-beds, if the land is not rich, should be manured, this can be done, before the seed are sown or afterwards. If the land is poor it is best to manure the bed before it is sown. Any well rotted manure will answer, but stable manure is best. Ashes answer very well for light soils, and have the advantage of having no grass seed in them. In saving manure for plant-beds, care ought to be taken to prevent grass seed from getting with it; so that stable manure, to be free from grass seed, ought to be saved when the horses are not turned loose out of the stable, and when they are fed on some kind of food that contains no seed. Corn-blades are one of those kinds of food. Hen-houses and the roosts of poultry furnish good manure for tobacco beds. Hog-pens also furnish very good manure for plants. When beds are manured after the plants are up, the manure should be put on in a very fine state. (1.)

It is a custom with many planters to cover their beds after they are sowed with pine or cedar brush. This is a very good way to get the plants up, as the brush keeps the land moist. The brush should be taken off the plants soon after they are up, as it makes them tender and what is termed *long-legged*.

To keep up places for tobacco beds from year to year, as soon as they are done with for that time, they should be hoed or wed up, and then covered with straw or tobacco stalks, three or four inches deep.

I now come to the transplanting of the plant. Having kept the land in which they are to be transplanted clear of too much grass and weeds it is now to be got ready for making the hills. The ground should be ploughed over, and if it should be *soddy* or lumpy, a heavy tooth harrow should be run over it. It is now ready to be laid off, which is done by running furrows from two and a half or three feet apart one way, and then turning and running furrows the same distance apart directly across the others, at what may be termed right angles; these furrows should be very shallow. Deep furrows make the hills too high, and when they come to be worked away the plants are left standing as if they were in pinacles. When making the hills, the top should be rounded off, so that the pat of the hoe will be no lower than any other part of the hill. This, though seemingly of little consequence, is more so than it appears to be at first sight. In times of heavy rains it prevents the water and sand from settling about the plant. Very often when plants have only been planted a day or two, there are heavy rains. If the hills are not made so that the water can run off immediately, the plants get covered up by dirt washing over them.

When drawing the plants from the bed they should be drawn with as much of their roots as possible. A common table fork, by being run under their roots, enables a person to draw the plants with all the fine fibres to their main root. This mode should not be resorted to until the beds have been drawn several times, as the fork is apt to loosen the earth about the roots of the plants left in them, and consequently injures them; but towards the latter part of the planting time, when they will not be much longer wanted, the drawing with a fork will cause the late planting to grow off immediately. For plants drawn in this way, will, by leaving all their fine roots commence growing much quicker after they are transplanted, than plants will which have been drawn by hand. Plants that are used to replant with should be drawn in this manner.

When the plant-beds are within a short distance of the tobacco land, the plants should be carried to it in baskets or tubs that will not hold more than a bushel; for by carrying them in large baskets they become bruised. The most convenient way is to haul them in a cart; but this way bruises them. The best way to manage when the beds are not too far off, is to set the most careful hands on the plantation in the beds drawing plants, while the smaller and less useful hands should carry the plants to those who are planting them.

When setting the plants in the hills, care should be taken not to put more of the plant in the ground than the root; that is, the plant should be set as near as can be as it was in the bed. By putting the plants too deep in the hills, they frequently stand some time and then rot off at the root; if they should not rot off they will not grow for some time.

After the plants that have been transplanted have commenced growing, or in the language of planters, taken hold of the hill, weeding time commences. It is well not to weed tobacco too soon after it is planted; for if most of the grass seed do not get up before the hill is taken away, they will come up after the tobacco is weeded out, and it will have to be weeded again. But on the other hand too much grass ought not to be suffered to grow about the tobacco hills. For silt is thought to be the means of producing what is called the web-worm which is sometimes very destructive to crops. Many planters are of the opinion that weeding away the hills in a short time after the plants are planted, will prevent the web worm from getting in the crop. I have known some to have all the grass carried out of their tobacco ground when their crop had become grassy under the impression that that would prevent the web-worm. This is a very good way; for grass left in tobacco lands, even if it is no cause of web-worm, prevents the tobacco from growing kindly. When tobacco is being weeded, too much of the hill should not be taken away, as it leaves the plant standing on a small spire of earth, and in dry weather exposes the root too much to the sun. Some planters always weed their tobacco plants without running a plough or cultivator in the space between the hills, because the plough and horse sometimes knock out of the hills some of the plants. This is a very laborious way, and a great deal of labor is lost. I have always found the most labor saving way to be, to weed, when the tobacco

ground is not very grassy, around the plant only, and afterwards plough the land by running two furrows between the plants each way. While the plants are young, if the ground does not get too grassy, I do not plough until the tobacco makes some growth. If the land should become grassy soon after the tobacco is planted, the ground should be ploughed by running two furrows in each row, and should be wed afterwards across the way it was ploughed.

After tobacco has been wed out some time, it is very often necessary to go over it again with the hoes, and take from around the plants grass that was left by oversight. This should be done without taking away any earth from the plants. Two ploughings are enough for tobacco after it is planted. A cultivator should be used afterwards. When tobacco begins to cover the ground in which it is planted pretty well, it should be *laid by*; then it should be gone over again with the hoe and a hill put to it. Hilling tobacco is not absolutely necessary; for I have seen fine crops that were not hilled. The most advantage of hilling is, it keeps the tobacco from blowing down in storms.

There are two kinds of worms which have not been mentioned in this essay; either of which are at times troublesome to tobacco growers: the common ground-worm and the tobacco or horn-worm. The ground-worm is troublesome to early planted tobacco. I know of no way to get rid of this kind of worm only the old one, and that is to hunt around the plants and kill them.

This worm never cuts much after the 10th day of June; about this time they appear to have had their day and disappear. The horn-worm is troublesome from the time of planting a crop of tobacco until it is housed. A large gang of turkeys manage this worm pretty well. When the turkeys cannot manage these worms, they must be pulled off the tobacco and killed.

I will suppose the crop *laid by*, and that the next stage has arrived; that is the *topping* of it. There are two opinions about which is the best time to top. One opinion is, that the tobacco will cure a better color if the plants are permitted to get out in full blossom before they are topped. The other opinion is, that tobacco should be topped as soon as it shows an inclination to flower, or in the language of planters as soon as it *buttons*. I think it should be always topped as soon as it shows a button, for the growth of the top takes from the plant of tobacco so much that would have gone to it had it been topped early. The same remark applies to succors that grow between the leaf and stalk. They should be taken out early; that is, they should not be permitted to grow large, for they take away much from the leaf which at this time is making its principal growth. (J.)

After a crop of tobacco is *laid by*, that is, after it is ploughed and hoed enough, there are from three to five weeks before it is ripe and ready to go to the house. During this time, a planter should make all the necessary preparation for housing. If he intends to cure his tobacco with fire, his wood should be cut and hauled to his barns. If he has not got tobacco sticks enough to hang all his crop they also should be prepared. If he intends curing without fire, his scaffolds should be put up around his barns. In short,

every thing that will be wanted, should be in its place before he commences housing; for after he gets fully to cutting his tobacco, he will have enough to do without having to do what might have been done before. (K.)

I will in this place make some remarks on curing of tobacco. *Firing*—that is, making fires in the barn, under the tobacco, after it is *hung*—is the surest way to cure fine tobacco. Tobacco that is intended to be *fired* should be hung in the house as quick as can be after it is cut. The house should be filled in a day, if possible, and fires put in immediately. The quantity of heat from fires during the different stages of curing a house of tobacco, should be regulated by the state of the weather. When fires are first put in a house, under tobacco just hung in, they should not be large, especially if the weather is warm and dry. For the first, second and third day, the heat should be such as will yellow the tobacco without sweating of it. After this time, the fires should be larger, so as to keep the tobacco as it cures dry. In dry warm weather, very little fire under tobacco will cure it best. In wet or cool weather, of course, more heat from fires is necessary. Tobacco cures of a yellow color, when managed in this way, if the fires are kept under it from seven to eight days. It is a very good way, also, in firing of tobacco, to let it hang in the house until it yellows by the air, before fire is put under it: then three or four days firing will answer. But the tobacco is not likely to cure yellow—it will, if properly managed, cure what is called a fine red. (L.)

After all that may be said about firing of tobacco, I would not recommend it only at particular times, unless barns could be fixed with furnaces so as to carry off the sparks and smoke, so as to prevent the barn from taking fire. I am apprehensive that even furnaces would not be perfectly safe; for there would be some danger even from having fire in the barn; and the pipes that would carry off the smoke and sparks, might, by passing through the tobacco as well as the barn, communicate fire to some part of it.

The loss of a barn, with its contents, is a heavy one. It takes also a great deal of wood to fire a barn of tobacco; and this on plantations where fuel is scarce, is of considerable consequence. Even if wood is plenty, it takes some labor to cut and haul it. I have for several years past cured my tobacco without putting a particle of fire near it; and I have found it to be nearly, if not quite as fine, as if it had been *fired*. Tobacco of good color, cured without fire, is worth more money in a foreign market, from the circumstance of its not being smoked by the firing process.

Tobacco that is to be cured without fire, should never be put in the house without its being hung out of doors, after it is cut, for several days. There should be erected around each barn a *scaffold*—the tobacco, as it is cut and *sticked*, should be hung on the scaffold, and if there should be no appearance of rain, it may remain there for five or six days before it is put in the house. Tobacco, before it begins to cure on a scaffold, is not injured by rains; and after it begins to cure, a rain that lasts a short time does not injure it. It is rain that lasts two or three days that injures tobacco hung on a scaffold. (M.)

A scaffold is constructed by burying in the

ground about two feet, forks set up perpendicularly, about ten feet apart from each other; in which poles are put nearly the distance of a common fence rail from each other. Fence rails are thus put across from one pole to another, leaving a space of four feet between each rail. These are what are called *tiers*. A scaffold should not be very high, for if it is, the lower leaves of the tobacco will become bruised from the winds. A scaffold should be of such a height, as to leave the ends of the tobacco leaves from one to two feet from the ground. It is not so well to erect scaffolds on the north or north-west part of a barn. They should always be made on the warmest sides of the barn. A planter can always get his forks for his scaffolds in the winter season, whilst cutting wood and rail stuff. Having said this much about scaffolds, I now return to the curing and housing of tobacco.

A person unacquainted with scaffolding of tobacco, would suppose that there could not be so much put in a barn in this way, as there could be by *firing*. It would be entirely a mistake. There can be as much tobacco cured in a barn by scaffolding, as there can be by *firing*. It is true it could not be done so quickly; yet in an ordinary housing season there is ample time to do it.

A planter who has several barns, when scaffolding of tobacco, should manage so as to be able to take into the house a part of a scaffold of tobacco every day, except rainy ones, during the season. When tobacco is being carried in the barn from the scaffold, the lower part of the barn should be hung full; and if that part of the barn will hold all that is at that time to be taken from the scaffold it should be left there until the space is wanted for more tobacco from the scaffold. By this means, the tobacco may have the advantage of several days in the barn, before it is finally hung away. The best time of the day to take tobacco in the barn, from the scaffold, is late in the evening. It should be handled very carefully, so as not to crumble the cured leaves. Tobacco should not, whenever it can be avoided, be carried in the barn from the scaffold, while wet with dew. This can always be avoided, except when there is an appearance of rain.

When about to fill a barn with tobacco that has been scaffolded, the tobacco should be hung so as leave *fire holes*, for if, about this time, there should come a spell of wet weather, the tobacco can have fires put under it, and be kept from being injured by the weather. However, tobacco that has been well killed by being scaffolded, will not injure in wet weather as near as soon as a person might suppose. It is only in long spells of warm wet weather that *firing* is necessary for tobacco that has been scaffolded. There are only two cases in which I would recommend *firing* of tobacco—one is in the instance just mentioned. The other is when a crop of tobacco, from untoward circumstances, ripens, or is not fit to be cut until late in the season for housing. Fires, by curing the tobacco quickly, prevents it from freezing in the house, which the lower leaves are apt to do, if left to cure by the air, when housed late in the season. Sometimes planters fire for want of house-room; that is, they cannot wait for their tobacco to cure by the air. I have always thought it best to have a sufficient number of barns. A planter had better build two barns than to have one burnt down.

I will here make some remarks on the construction of tobacco houses. Tight houses will not cure tobacco as well as moderately open ones. Even when tobacco is cured by fires, a very tight house is not the best. There is a large quantity of moisture in a house of uncured tobacco—so there must be some opening for it to escape. I have seen barns where the main building was shedded all around with no other covering except the roofs of the main building and sheds—that is, no weather boarding put on any part of it, except the roofs. Barns of this construction certainly cure tobacco best when there are no long spells of wet weather; for these kinds of barns cannot be fired in. It is also liable to be injured, if not stripped shortly after it is cured. I have also seen barns of this construction with the sheds partially weather-boarded by setting up narrow planks around the sheds two or three inches apart. This is certainly some security against wet weather; yet the tobacco is not sufficiently secured against it. Those who have the timber, can build no kind of barns that will answer better for tobacco than the old fashioned barns built of oak boards and shingles: they let in sufficient air when it is curing, and keep out damp air after it is cured. Barns, when built with plank and shingles, always cure tobacco best when the plank is put on with one end upwards, though the frames of barns weather-boarded in this way, will not last as long as when the plank is put on horizontally. The best way probably to build a barn to suit all times, and all kinds of weather, would be to have all the plank intended for weather-boarding, made into large doors, and well hung with good hinges, so that when the tobacco wanted air, all the doors could be opened—when damp air would injure it, the doors could be shut. A barn constructed after this manner, would cost a little more money for hinges for the doors, and latches for fastening of them. I have seen one built after this manner, which answered very well until it was burnt down. The doors could reach only to the eaves of the house, if so far; of course the other parts of the building must be weather boarded in the usual manner. (N.)

When tobacco is ripe and fit to be cut, there are around the roots of the plants several leaves nearly cured. They can now be saved either before or after it is cut. Tobacco should have no leaves taken from its roots until it is ripe; taking away the leaves too early stops the growth. The tobacco saved from around the roots of the plant, is called *ground leaf*. The usual way of saving this kind of tobacco, is to pull the leaves by hand from the roots of the plants, and tie\* them up in small bundles, and straddle them across a stick, until they are cured enough. When fine ground leaf is cured, the usual way is to select the largest leaves that are about half cured, and run a peg three or four inches long through the large end of the stem, filling the peg with leaves, but leaving a space of about half an inch between them, and then hang them across tobacco sticks.

The best time of the day to gather ground leaves, before the tobacco is cut, is late in the day about an hour from sunset; when the tobacco

\* Sweet potato vines make a good tie.

ground is wet, the leaves are at this time of the day in order to be gathered. Leaves gathered when the dew is on them, will injure before they get dry. Tobacco, when being cut, should not, if it can be prevented, be suffered to fall too much—that is, lie on the ground until the leaves become very limber; for when they become too much so, they clam around the stalk, and the tobacco will not cure so good by it. A great deal of care is necessary while tobacco is being cut and carried to the house; it must not be suffered to lie in heaps and heat. While laying in the field, if the sun shines hot at the time, it will be burnt by the sun, if permitted to lay too long. When hauling it to the house, the loads should not be large, as it will bruise when hauled in large loads. I have seen some persons have bushes with green leaves laid in the bottom of their carts before the tobacco was put in the cart. This was done to prevent the tobacco from being bruised. (O.)

There are three ways in use for hanging of the tobacco plants on the stick, one way is, by splitting the stalk before the plants are cut, another way is to put a peg in the big end of the stalk; this is a tedious way and though in old times the only way used, has now nearly gone out of use. The other way is to put a sharp pointed iron spear, with a socket like a chisel on a tobacco stick, and then run the plants on the stick, by running the iron spear through the stalk of the plants. This is the quickest way of the three, but unless there is a considerable space left between the plants, the tobacco will injure. The most careful hands should only be permitted to stick tobacco in this way. Those hands who could not be trusted to put tobacco on the sticks, could be engaged in the tobacco field at other work.

The splitting of the stalk and afterwards straddling it across a stick, though not so quick a way as the one just mentioned, is a better way for several reasons, one is, the plants can be easily regulated when they are put in the house; another is, the tobacco cures quicker, and when housed late is not so apt to be frozen in the house. It does not require so much judgment when putting the plants on the stick. The tobacco also, is much easier to get off the stick when it is wanted to strip.

We will now suppose the tobacco to be housed and cured and ready to be stripped, that is, taking the leaves from the stalks; whenever the tobacco is moist enough, or, in planter's language, in order, this can be done. The different kinds and colors must be tied up in separate bundles, and each kind put away by itself. After tobacco is stripped care must be taken to prevent it from heating in the bulks, which it quickly does in warm weather if put away in too moist a state. If it should begin to get warm it should be taken out of bulk immediately and put in a situation to cool and dry. If bulks of tobacco should heat in warm, wet weather, and the weather continues so, the best way then is to straddle the bundles across sticks and hang them up in the house. Tobacco of a fine color and good leaf should never be suffered to heat in bulk; for the color, as well as the leaf, is considerably injured thereby. Tobacco of a dull color and coarse leaf is not injured so much by heating in bulk; though

heating in bulk injures any tobacco more or less; the old notion that tobacco was not conditioned to pack in hogheads until it had heated in bulk is entirely erroneous. Tobacco may be packed without injuring in the hoghead, if properly dried after being stripped from the stalks; indeed tobacco after it is stripped requires a great deal of attention to manage it properly; and if managed properly until it is in the house and cured, may be by improper management or neglect, made to be worth less money, after this time. I have seen tobacco myself put up in bulks, and suffered almost to rot before any thing was done to it. It is principally the management and handling of tobacco after it is cured, that makes the distinction between a nice planter and an indifferent one.

When bulking of tobacco the leaves should be kept straight and the bundles spread open somewhat like a fan, which can easily be done, by placing two or three bundles at a time, by the person who is handing the tobacco to the bulker, against his breast, and giving them a stroke down with the other. I have found the best way to condition tobacco when stripped, to be as follows: Take two tobacco sticks and lay them parallel and about one foot apart, then bulk on them about one hundred pounds, by placing the bundles across the sticks. The tobacco should be kneed down; two persons can move these bulks whenever wanted by taking hold of the ends of the sticks. Tobacco when bulked in this way, if not very moist, will not want any thing more done to it until wanted to pack, especially if the bulks are put up on the tiers of the barn, which can be easily done by lifting them up by the tobacco sticks. After tobacco has been bulked in the way here recommended the small bulks should be on a drying day taken and opened, and the tobacco laid down by hand on the large bulking places. Bulking places should be fixed for the different qualities, and as the small bulks are pulled to pieces the different qualities should be placed apart from each other. Though in bulking on sticks as recommended, each quality as near as can be at that time ascertained, should be bulked to itself. In moving tobacco from the smaller to the larger bulks, the large bulks should, if the tobacco is very moist, have only three or four courses of bundles of tobacco placed on them at one time; after they have dried somewhat, three or four more courses can be placed in the same manner, and the operation repeated as long as necessary. Thus a barn of tobacco may be conditioned in this way without any of the tobacco heating.

The best direction that can be given about packing of tobacco in hogheads are, that the tobacco should only be moist enough to keep it from crumbling, and that fine tobacco should not be pressed so hard as to bruise it. Tobacco, though often packed before, is hardly conditioned enough before the month of May.

I shall now make such remarks on the cultivation of tobacco and the management of the plantation, as have been omitted in the preceding part of this essay.

Plaster of Paris, on suitable land, acts well on tobacco, though it will not cure so fine a color if there is a great deal of plaster put on it while in the field. When there is much litter in the land a small quantity of plaster is of great service, as

it gives the tobacco a healthy growth which otherwise would be sickly. Some planters sow the land with plaster before the tobacco is planted and afterwards plaster the plants, after they are transplanted. This way makes a heavy crop, but it will not cure so fine as it would have done with less plaster. I have generally found that a large spoonful is enough, if put in the bud of the plant directly after being *wed-out*.

When manuring tobacco land with manure that is well rotted, or with ashes, the best time to put it on is when the land is ready to be laid off for making the hills. The plough then throws the manure where the hill will be when made.

I have said that plant beds should be sowed in March; they may, in case of accidents, be sown much later and yet bring plants in time. In the year 1826 I had most of my plants killed by a spell of freezing weather, about the middle of April. About the 18th or 19th day of the same month, I burnt and sowed a bed in low land. I selected the place along the margin of a branch for the purpose of having water at hand to water the bed if necessary; for late in the spring as it was, I knew it would only be by great attention that the plants would come in time. It so turned out that little or no rain fell until near the last of June, and I regularly, every evening, watered the bed: by the middle of June the plants were large enough to plant, and if there had been a planting season, at that time, a great many plants could have been planted for the size of the bed, out of it. I knew a bed that was sown in Feb. 1820; the plants came up in March; on the 2d day of April a snow storm commenced which lasted all day, snow fell to the depth of 5 or 6 inches, which was succeeded by a cold northwest wind. Nearly every plant in the bed was killed; in a few days it was dug up and sowed; as soon as the plants got up the bed was cleaned of them by the flies; about the 8th or 10th of May the bed was dug up and sown again; by the middle of June, there was a smart drawing of plants taken from it, and by the last day of June a crop of fifteen or twenty hogheads of tobacco planted out of it. I give these two instances to show that plants may be raised in time in case of accidents, although sowed very late in the season.

It seems superfluous to say that a planter should provide and keep on his plantation the best of agricultural implements; for every mechanic, artisan and agriculturist should provide himself with the best of tools, for it has been remarked that none but a rich man can afford to work with an indifferent tool! Of all others a planter stands most in need of labor saving tools and machinery. For tobacco requires a great deal of labor and attention to produce it of a fine quality; how much labor is often lost by giving a hand an indifferent axe or worn out hoe, to work with, how much more ploughing can be done, and how much better, with a plough in good order, than with one worn out. How much time is often lost in sending to a neighbor's to borrow a spade, or to grind axes for want of a grindstone at home. Half the time lost in this way in the course of a year would if employed in some useful labor more than purchase a spade and grindstone. But it is not only to these little matters that a planter's attention should be called, as tobacco puts it out of his power to devote as much time as he would wish to the

raising of food for his family, workmen, and animals. He ought to provide such machines and utensils as will enable him to prepare his food for his animals to the best advantage.

I must again say that it should be the greatest object with a planter, to have his tobacco crop grow quickly after it is planted; tobacco that grows slowly is apt to become diseased (for tobacco like other vegetables is subject to disease) and will not cure of a fine color. To make fine tobacco requires great attention to what would seem to be small things. For instance, the setting of a tobacco plant in the hill may retard its growth considerably. Put the main root in the ground doubled like a staple, if it live at all, it will have to grow an entire new root before the leaf grows any. Or set a plant too deep in the ground if it does not rot and die it will be a long time before it goes to growing; when a crop of tobacco is ready for the house early there is more time to take care of it; there is no danger of its being spoiled by being caught in frost; the plants will be entirely cured before very freezing weather commences, consequently, there will be none to freeze in the house. A forward crop likewise can be stripped early and of course the sooner got ready for market.

As I am about to close, I must say, there is nothing recommended in my essay that is far-fetched; to an experienced planter, the most of it will appear common-place, but to young planters it will give many a useful hint.

Young men when commencing any business stand in need of the experience of those who have been engaged in the same kind of business before them.

[*Note*—The words in *italic* are technical terms used by tobacco growers.—*Ed. Am. Farm.*]

[Believing that it would give additional value to the foregoing interesting essay, we requested of a gentleman who is well qualified for the task, to furnish notes and remarks on those points of practice and opinion, which, though doubtless correct as to Maryland, or bright tobacco, are unsuitable to the very different product sought to be made in Virginia. The writer of the commentary furnished upon this request, has had long experience in tobacco culture; and the high prices obtained for his crops were sufficient evidence that the after management was judicious. Not having space for all the notes in this number, they will be deferred to the next.—*ED. FAR. REG.*]

#### MONTHLY COMMERCIAL REPORT.

For the Farmers' Register.

The present month is not marked by any thing of peculiar interest. Political affairs wear a pacific aspect. Money matters have not improved. Stocks of almost every description are even lower, so great is the want of confidence and the scarcity of money. European capitalists have ceased to invest in American stocks, and their own govern-

ments are now endeavoring to obtain large loans to meet the heavy expenses incurred by their war-like preparations. The treasury of our federal government is worse than empty; for it cannot meet the demands upon it incurred some months past. Many of the state governments are in a similar condition; and the banks south of New York, so far as the community is concerned, have suspended. Thus fiscal matters are in a most disordered state, without an early prospect of restoration.

The variations in the prices of produce in Virginia, since last month, have been slight. Tobacco has advanced a little, and may be quoted at \$4½ to \$9. Cotton is rather lower—price 8 to 10 cents. Canal flour \$4½. Corn 42 cents. Bacon 8 to 9 cents. Shipments of flour are going forward to England from New Orleans, New York, &c. Domestic exchanges are rather worse. The receipts of cotton at the principal markets in the United States to the latest dates are 1,105,000 against 1,372,000 at the same period last year.

March 29, 1841.

X.

#### TO PREVENT INSECTS CLIMBING UP FRUIT-TREES.

At a late meeting of the Entomological Society, Mr. James H. Fennell communicated the following successful mode of preventing insects ascending the trunks of fruit-trees. Let a piece of Indian rubber be burnt over a gallipot, into which it will gradually drop in the condition of a thick viscid juice, which state it appears it will always retain; for Mr. Fennell has at the present time some which has been melted for upwards of a year, and has been exposed to all weather without undergoing the slightest change. Having melted the Indian rubber, let a piece of cord or worsted be smeared with it, and then tied several times round the trunk. The melted substance is so very sticky, that the insects will be prevented, and generally captured, in their attempts to pass over it. About three pennyworth of Indian rubber is sufficient for the protection of twenty ordinary sized fruit-trees.

#### PROCEEDINGS OF THE PEE-DEE AGRICULTURAL SOCIETY, AT CHERAW, S. C., FEBRUARY 22, 1841.

Extract From the Farmers' Gazette.

The following premiums were awarded:

To Gen. James Gillespie, for having produced the greatest quantity of cotton on three acres of upland the amount being 1735 1-3 lbs. per acre of seed cotton, a silver cup of the value of \$30 00

To Samuel Keeder for the greatest production of sweet potatoes, he having produced on one acre three hundred and twenty bushels, a silver cup of the value of 10 00

The following is a memorandum of the culture of the cotton, soil &c. by Gen. Gillespie.

"Land red or mulatto, about three hundred bushels of manure chiefly from the stable, a part fermented and a part not, was spread broad-cast to the acre. The ground then broken up with a

two horse turning plough; then run off with a 10 inch shovel, into rows 3 1-2 feet apart. Scattered forty bushels of partially killed cotton seed to the acre in these furrows, upon which a ridge was made by running two furrows with a dagon plough. Then sowed one bushel of plaster of Paris to the acre broad cast, and ten bushels of slacked ashes per acre on the tops of the ridges.

Planted 13th April, the seed was rubbed in plaster of Paris.

Chopped out with 9 inch hoes 5th May.

First ploughing 6th May run two furrows in each row with a sweep.

First hoeing May 19th and thinned to one and two stalks in each hill; the cotton had died considerably, replanted at this hoeing for the third time.

Second ploughing, May 21st, run two furrows with a shovel in each row near the cotton: June 1st ploughed out the middles with two shovel furrows. June 2d hoed second time and replanted the fourth time as the cotton was still dying; the previous replanting had come up but most of it died.

June 23d ploughed third time; three shovel furrows in a row: June 28th hoed third time.

July 20th ploughed fourth time run dagon plough (mould board to the cotton) and shovel in the middle:

July 28th hoed fourth time.

Product: 5206 of seed cotton making an average of 1735 1-3 lbs to the acre.

It will be observed that this cotton died so much as to make four replantings necessary, and even then a perfect stand was not obtained. This I attribute to the too great fermentation of the cotton seed placed under the ridge, combining probably with the unrotted stable manure. It was hoped that this rapid fermentation would be checked or carried off by running a furrow on each side of the ridge on the 21st of May and leaving it open for a few days, but in this I was disappointed. The object in placing the cotton seed under the ridge, was to force the plant forward early.

The stable manure was spread broad cast.

1st. Because that quantity under the bed would be likely to destroy the plant before the roots could pass through it.

2d. If placed under the bed and a drought of but short duration occurred in the latter part of the season, if the offers of forms did not drop during the drought, a good season would cause so sudden and rapid a growth of the plant as to cause the forms then to drop.

3d. To feed the plant through the lateral roots when maturing the bolls. The plaster of Paris was put on to assist the cotton in case of drought or ordinary season, but rainy as the year was, I should say, judging from former experiments with it, that the plaster did no good.

The ashes were used because I believe them to be a good manure in all lands well drained; I have never tried them on wet lands.

The above is a true account of the method of working and product of 3 acres of upland cotton to the best of my knowledge.

JAS. GILLESPIE.

The following is a memorandum of sweet potatoes raised on one acre of land by Samuel Keeder.

The land on which the potatoes were planted was sandy. It was broke up in April and thirty-five two horse loads of manure, the scraping of the yard, was applied. This manure was ploughed in and then the land was made into hills three feet by three and a half, ploughed three times and hoed out each ploughing, product, three hundred and twenty bushels. The potatoes planted were the Spanish variety. I certify the above, to the best of my knowledge. S. KEELER.

#### COOKING BEETS.

From the Albany Cultivator.

Take beets of middle size, and after removing the tops and dirt, roast them in a fire as potatoes are roasted. When done, they are peeled and served up in the usual manner. One who has tried them in this way, says they are much sweeter and richer than when boiled.

### SUMMARY OF NEWS.

#### BANK AND BANKRUPT ITEMS.

*Republished from the weekly summaries of news, attached to the Weekly Farmers' Register.*

[It is designed that the concise summaries of general news prepared for the Weekly Farmers' Register, shall also hereafter be presented together at the end of each monthly number, as will be commenced in this. One of the main objects of this is, (in pursuance of views stated at page 157 of this number,) to present to the agricultural public facts and truths in regard to the banks and their operations, which the publishers of newspapers generally are unwilling to utter, and in regard to which, therefore, there is a deplorable want of information. To bring up the banking history of these eventful days, from the pretended "resumption of specie payments," all items relating to the banks which appeared in the weekly numbers of January and February, will be here republished; and the entire summaries of news thereafter, commencing with the present month.]

*Extract From the Weekly Farmers' Register, Jan. 16, 1841.*

The time fixed by the laws of Pennsylvania, Maryland and Virginia, for the banks to resume specie payments, is Jan. 15, or soon after: and some of the newspapers are urging (and we fear successfully) that the resumption should be postponed, on the grounds that to meet it the banks must contract their issues. No doubt!—but when will not the same reason exist, and the argument be equally good? The banks which cannot pay after a suspension since 1837, (acknowledged or virtual,) will never pay. It is time for those institutions which are bankrupt, to be made to appear so, and that the most rotten parts of a fraudulent general system shall be allowed to sink, by withdrawing from them that support of government which alone upholds them.

On the 11th, the presidents of all the banks in Baltimore held a meeting and resolved that it was inex-

pedient to resume specie payments unless the Virginia banks did so also, simultaneously. This, we suppose, settles the matter that the reign of irredeemable paper and irresponsible banking is to continue—as the resumption in Virginia, by law, was to follow that of the more northern banks.

*New York Jan. 6.*—United States Bank stock fell 7 per cent during this day, having sunk to 53. The whole decline of price is 10 per cent since the recent publication of the bank's own report of its own affairs.

July 7th further decline to 50½.

The Franklin Bank of Baltimore has failed.

The Philadelphia Ledger of 14th, from which the above is copied, expresses the opinion that the Philadelphia banks would resume specie payments on the 15th—and considers the declaration of the presidents of the Baltimore banks (stated above) as decisive that they will not resume at present.

*Saturday, January 23, 1841.*

On the 15th, the Philadelphia banks resumed specie payments, and the Maryland and Virginia banks *did not*.

The resumption law of Maryland requires her banks to pay specie *after* Virginia—and the law of Virginia requires her banks to resume specie payments *after* the banks of Maryland. The banks of each state proclaim their entire ability and readiness and anxiety to resume payment—but both stand upon the point of law, (or the point of bank honor perhaps,) and wait for the banks of the other state to pay either first or "simultaneously!" How long will these contradictory "sayings and doings" continue?

\$110,000 are stated to have been drawn from the Philadelphia banks the two first days after resumption, the United States' Bank having bled for more than half.—*Whig*.

Large sales of United States bank stock at Philadelphia on January 20, opened at 62, and closed at 53. A small amount between the boards sold at 54. Same day in New York, 975 shares of this stock sold at from 51 to 51½.

*Saturday, January 30, 1841.*

The Baltimore and Virginia Banks, have at last agreed upon a "simultaneous" movement, and now promise to resume specie payments on February 1st. Qu. Have they gained any thing, in reputation or otherwise, by the addition of 15 days delay to their previous failure to pay?

Philadelphia, January 22. The correspondent of the Journal of Commerce writes that "business of all descriptions is less active, and money in greater request than for the past year. It now commands a rate of interest running from 1½ to 2½ per cent per month—indeed it is next to impossible, except on the most unquestionable paper, to obtain it at any price. The banks are not discounting, and dare not, while they stand coupled with the Bank of the United States. The confidence, which it was mainly hoped would be extended to our currency on a united resumption, is not yet apparent, nor will it be, while institutions notoriously insolvent contribute in any large degree in furnishing it."

It is ascertained that the New Brunswick Bank has stopped, and it is feared, finally, *Id*.

The Governor of Mississippi states, that he has issued his proclamation declaring the charters of the following banks forfeited:

The Tombigbee Rail Road and Banking Company;  
The Hernando Rail Road and Banking Company;  
The Mississippi Rail Road and Banking Company;  
The Benton and Manchester Rail Road and Banking Company;  
The Aberdeen and Pontotoc Rail Road and Banking Company;  
The Bank of Vicksburg;  
The Mississippi Union Bank, and  
The Citizens Bank of Madison County;

Several others, he believes, have failed to comply with the injunctions of the Bank Law.

*New York, Jan. 27.*—The stock market again gave way to-day, and our quotations are lower, without any exceptions. United States Bank Stock fell  $\frac{1}{4}$ , Delaware  $\frac{3}{4}$ , North American Trust  $\frac{1}{4}$ , Harlem  $\frac{1}{4}$ , Stonington  $\frac{1}{4}$ ; and the market closed with a tendency decidedly downward.—*Ev. Post.*

*Saturday, February 6, 1841.*

The Farmers' and Mechanics' Bank of New Brunswick, (N. J.) has broke, and the doors were closed on the 23d ult., by an injunction of the Chancellor.

On February 1, the banks of Virginia and Maryland resumed specie payments, *after a fashion*. By each bank, and each branch having previously exchanged, or otherwise sent its own notes as far from home as possible, and by issuing no other than the notes of other banks or branches, (which they can, and of course will, refuse to pay in specie,) and by inducing the merchants under their control to draw their checks for "current notes," the banks had admirably well "prepared for paying specie"—that is, they had so arranged as to pay as little of it as possible. To forward this great object still more, there is now a bill before the Virginia legislature to authorize the banks to issue small notes, (for sums under \$5); and it is to be feared that this additional measure to serve mere bank interests, and to keep specie out of circulation, will pass that body. The northern brokers, who alone are enabled by their position to counteract these non-paying designs of the banks, will be the only persons who will obtain specie to much extent. And whether drawn and carried off by foreign brokers, or otherwise remaining in the vaults of the banks, the specie will be of very little service in filling the circulation of Virginia, so as to guard against the worst evils of the next bank suspension. The proper policy, for all who prefer the interest of the country to that of the banks, and who dare so to act, is to refuse all checks for "current notes," and to draw specie wherever it can be carried to the country, and diffused through the country circulation, and to receive from no bank or branch, any notes but its own, which it can be required to redeem.

Since the resumption of specie payments, United States bank stock has fallen from 52 to 48 and a fraction.

*February 13.*

The advice to draw specie from the banks, and diffuse it through the country circulation, as offered in our last week's summary, was too late; and the occurrence of another bank suspension, which was then intimated, had then actually begun in Philadelphia. The United States Bank, after a very short resumption, again stopped payment on the 4th. The news reached this place on Sunday, the day after our last weekly publication, and on Monday morning, in the first banking half hour, the Branch Farmers' Bank and Branch Exchange Bank again stopped specie payments, after a six days "resumption." The thirteen other banks of Philadelphia also stopped a day after the United States Bank, after having first, but the night before their stoppage, held a joint meeting and declared and published to the world that they would continue to pay. The New Jersey, Delaware and Baltimore banks have followed their example, of course, and so will all in Virginia, and probably all south of New York that have not already done so. The banks in Maryland and Virginia may not have paid away much money in their six days resumption; but another and so speedy a suspension, will serve as a heavy draft upon, and prodigious lessening of, their remaining credit and reputation, and hold on the confidence of the country at large. The banks throughout this country are above all law and all restraint; and they are made by law impregnable against all assailants, except themselves. And by their own hands, or measures, they are now reaching

that end which is approaching, however slowly, but which is yet inevitable. Now will ensue another long time of suspended payments—if indeed payment will ever be resumed *bona fide*, and to full extent, by the existing banks of this country, or any future banks established upon the present system. Every body (except the most submissive and subservient of bank slaves) admit that the banking system needs reform; yet none will attempt to forward it. The banks are left to reform themselves; and, in sufficient time, they will do it, and with a vengeance.

In the new act which the Virginia legislature will pass this session to relieve the banks, (as such laws now are made annually, and as regularly required as new almanacs,) we beg to suggest the propriety of a provision to direct a new style of bank notes, for the relief of tender consciences of bank presidents and directors. We propose simply to insert the word "not," so that a bank note shall read thus: "The President, Directors & Co. of the Bank of —, promise not to pay twenty dollars," &c. &c. This amendment, while serving to conform much nearer (if not without exception) to the truth, would not at all lessen the currency of the notes, nor impair the credit of the banks adopting the change of obligation. It is not the words of their promises on their notes, nor the credit or solvency of the banks, that sustains their circulation; it is the general endorsement by the state.

United States Bank stock has sold as low as 25 since its "suspension," or *bankruptcy*. Its notes are 15 per cent. below par in Philadelphia. Notes of other banks there 5 per cent. below specie.

The early stoppage of the Farmers' Branch Bank in Petersburg, we are proud to have proved, by presenting for specie a check of \$400; which being refused payment, (their first refusal,) we had the bank regularly protested, and would have forthwith sued, (and enforced our right by legal process,) if the authorities had not thought it best to succumb and pay the demand in legal coin. If they had not, we would have forced them to do so. As it is, we have shown the way to all who choose to compel banks to pay their debts.

What we have said, and still more what we have done, to expose the false pretences of the banks, and the rottenness of the system, has aroused the malice of the satellites of the banks. This gratifies us much, as it shows that our small shot have not been fired altogether in vain. "The wounded pigeons are known by their fluttering." We fear not the banks, omnipotent though they be, and heartily despise the anger and malice of their would-be-borrowers, and tools.

The Richmond Enquirer of Thursday, says, "A fine spirit animates our presidents [of the banks.] One of them told us yesterday, in a decided and buoyant tone, when asked what we should say for them; 'Say that we are paying specie, and that we mean to do so. But don't say as you did on Tuesday—we will if we can. Say unqualifiedly, we can and will go on.' The Richmond Compiler of yesterday says, 'The banks of this city have paid all demands in specie so far, and are determined to go on, it appears. Some of the officers tell us that there can be 'no ifs ands' about their course—that they will pay specie at any event.' We wish that such may be the result, but have no faith in it. We have noticed that declarations of willingness to pay were often uttered, through newspapers or otherwise, the bolder and louder in proportion to the nearness of an approaching and certain suspension. The banks of Virginia are no doubt as good as any others; but none are able to maintain payments, because the whole system is rotten and sinking, and deserves to sink and perish. We learn from private information in Richmond that the banks there have not paid, and do not pay specie for checks; and as very few of their own notes are in Richmond, (by their own previous policy,) of course the demands to pay notes have as yet been small.



The banks of Georgia resumed specie payments on the 1st—just in time to unite in the general re-suspension—which news may be expected next.

An injunction has been served upon the Newburyport bank, to stop its operation.

The act to permit the banks to emit small notes (\$1 & \$2) passed on Tuesday. This would have been a very bad measure, with specie payments existing. But under a suspension, we admit it to be proper and right. The best and only *redeeming* feature of the law was very nearly being struck out. This makes these notes redeemable in specie at any branch bank, as well as where issued.

*Saturday, February 20.*

A report from the Secretary of the Treasury was laid before the senate of United States on February 12, "giving his views and calculations as to the losses sustained by the government and people through the Bank of the United States, and State Banks. He estimated the fluctuations in Bank currency, affecting prices, extravagance in living, sacrifices of property &c. (not connected with his other computations) at *one hundred and fifty millions of dollars!!* The aggregate loss he computes at three hundred and sixty-five millions, four hundred and ninety-seven dollars!!!"

We see that the newspapers of North Carolina and Georgia are reporting, and professing to believe, that the banks of Virginia are paying specie, and are applauding them highly for it. Their editors, or those who speak in their names, are indeed "thankful for small favors," and are perhaps the more ready to believe, or to report that the Virginia banks are paying specie, because they hope that the some belief, or good report, will be extended to their banks. Most commercial newspapers are as much under the control of the merchants (if not directly of the banks) as the merchants are under the control of the banks—and therefore few of their conductors dare to offend the banks by telling any unpalatable truth, until it has become notorious, and can no longer be held back with any benefit. Therefore it is useless to expect to learn from the newspapers whether the banks pay specie, in remote towns from which we have no other means for information. But we infer that the banks of Richmond and of Petersburg are as much specie-paying banks as any others in the state (or perhaps in the United States), and there is certainly no *bona fide* specie paying bank there. The Virginia bank in Petersburg, alone, pays its own notes, and those only. And as scarcely any notes are in circulation in any town where issued, it makes very little difference whether these few (when presented) are paid, as at this bank, or refused to be paid, as elsewhere. Checks are not paid in specie, as a general rule, at any of the banks, and specie change is very little more abundant in circulation than before the so-called "resumption." If such as these are indeed specie-paying banks, there is but little difference between the paying and not paying specie. It is admitted by the most thorough bank partisans that when the northern banks stop paying, ours must follow the example; and this is urged as their all-sufficient excuse. If so, (and we do not mean to deny it,) we have not to look to the legislation of Virginia for improving our currency, but to that of the northern states. Of course, while the present banking system lasts, there is no possible chance for a truly convertible paper currency. The present shallow and empty pretence of specie-paying made by or for any banks that have but lately "resumed" or pretended to resume, will not continue longer than the several legislatures shall pass the annual indemnifying law for the benefit and protection of the banks.

The teller of a specie-paying bank in Macon, Ga., pays its notes in small silver, and weighs every separate piece. In this manner, and by great industry,

he paid out \$20 the first day of resumption. A holder of \$400 in notes of the bank, has engaged the services of the teller for several weeks in advance. This operation presents the very *beau ideal* of a modern convertible paper currency, and the bank which has shown the way ought to be esteemed a *model institution*. We recommend the example to all banks that claim to pay specie, and desire to enjoy the reputation at as little cost as possible.

*Saturday, February 27, 1841.*

Most of the banks of Virginia still *pretend* to pay specie, and, judging from the newspapers, most people in and out of Virginia, either believe, or profess to believe, in the truth of the pretension. We repeat that there is not a *bona fide* specie-paying bank in Virginia—and we predict that there never will be one, while the present banks and banking system last. It is very easy to *assert* the contrary, and very difficult (for any but the bank authorities themselves) to *prove* the truth; but as soon as the Virginia legislature shall have passed the annual act of *plenary indulgence*, for all past and future banking delinquencies, the truth will be less hidden. In the present state of things, and under the despotic bank influence that prevails, and the depraved moral sense which banks have introduced, it is more creditable and *honored*, as well as more safe and profitable, for an individual or a newspaper to tell falsehood to benefit the banks, rather than truth to their disadvantage.

The legislature of Pennsylvania have passed an act suspending for 40 days the existing legal penalties incurred by their *avowedly* suspending banks. The governor has not yet given his assent, but we presume that he will; and that the 40 days will be hereafter extended to as much time as the banks may require.

Ten years ago, the city of Philadelphia had, or thought she had, more than fifty millions of active bank capital. Now, of really available active capital, she has only about five millions. All the rest is either irrecoverably lost, or loaned to the state and the United States Bank, so as to be entirely unavailable. Yet Philadelphia is going on with her business. What a comment is this upon the notion that a great amount of banking capital is essential to the improvements of business!—*Jour. Com.*

Public opinion has changed very much within twenty years. There is now no reverence for banks; and a national bank would, as to public favor, rest on a very sandy and constantly receding foundation. Men have learned to go alone. The merchants and manufacturers do not now rest upon the banks. A most wonderful individuality and personal independence have come into the community. The banks have broke or have been paid up until their loans are no more than their capitals. They owe the community as much as the community owe them. Affairs have assumed a natural, free-trade shape, almost without our being conscious of the change.—*Id.*

A letter from Cincinnati, (in the St. Louis Republican) says the bills of the Bank of Gallipolis are not worth one cent in the dollar, and probably never will be. He adds: "I have this morning received a circular from the new cashier stating that frauds to an unknown but enormous extent have been practised by the former officers, in putting out circulation without the knowledge of the directors, and that even now agents are supposed to be employed in that work. The bank has stopped, and their assets are supposed to be exhausted."

United States Bank stock had fallen in London from £14 5s. to £11 10s. (about \$13) a share, in consequence of the news from the United States of the *intended resumption*. How much more will it decline when they hear of the actual issue?

A public meeting of the citizens of Augusta, Ga., on the 13th, adopted a preamble and resolutions of which the essence is in the following: "Resolved that

all the Banks of Georgia ought to suspend immediately the payment of specie."

Sales of the United States Bank stock in New York (on 24th) opened at 22½ and sunk to 20. [*Cour. and Eng.*] In Philadelphia it sold at \$20 at 60 days. Same day exchange at New York at the following rates of discount:

"On Boston	-	-	-	par to ¼
Philadelphia	-	-	-	4 to 4½
United States Bank	-	-	-	14
Baltimore	-	-	-	4
Richmond	-	-	-	4
Charleston	-	-	-	3½
Savannah	-	-	-	5½
Louisville	-	-	-	8
St. Louis	-	-	-	8
North Carolina	-	-	-	4
Cincinnati	-	-	-	6
Augusta	-	-	-	8
Mobile	-	-	-	10½
New Orleans	-	-	-	7½

*New York Express.*

Strange that the notes of the "specie-paying" banks of Virginia, and North Carolina should be 4 per cent. below par? Unluckily for the banks, the prices of exchange and of specie will not lie.

## SUMMARY OF NEWS FOR MARCH.

(*Republished from the Weekly Farmers' Register.*)

*Petersburg, March 6, 1841.*

Philip P. Barbour, Judge of the Supreme Court of the United States, died suddenly at Washington on the night of the 24th February.

The Journal of Commerce says that a large number of the colored persons who emigrated from Philadelphia a few months since for the island of Trinidad, have returned, and bring an unfavorable report of the condition and prospects of those who remain.

*Extensive Swindling.*—Sylvester's Reporter publishes a list of 128 banks which have failed, and swindled the community out of at least \$28,000,000.

The Grand Jury at Baltimore have found a presentment against James L. Hawkins, late cashier of the Franklin Bank of Baltimore, for abstracting \$100,683.75, the property of that institution; and a bench warrant issued for his apprehension.

A. M. Carter, discount clerk of the Farmers and Mechanics' Bank at Baltimore, is reported to have fraudulently made use of seven thousand dollars, belonging to the funds.

The New York American thinks there is a growing disposition in that city to include banks in the bankrupt law now before Congress, and says it is not surprised at this, "for many of them have provoked the forbearance of an honest community almost beyond endurance." A writer in the Journal of Commerce endorses this opinion, and says—"Many merchants of this city, who last year opposed it, now approve it; and simply because they know of no rule of equity which should absolve a bank from being compelled to pay its honest debts, any more than an individual merchant. And the full conviction of any bank that if it did not punctually pay its debts, it would be wound up, would most effectually put an end to all the wild and ruinous expansions of the banks from which the country has suffered so much during the last five years."

The bankruptcy (that is the discovery of it,) of the bank of Gallipolis, Ohio, has exposed a plan of swindling transactions unexampled even among banks. By enormous issues of notes, beyond the means of redeeming, farther than to preserve enough credit to trade and cheat upon,—the credulous bill-holders will lose, as is supposed, some \$300,000. But if detection had not come too soon, and cut short this gainful business, it would have been greatly increased, and immediately, as arrangements were made to issue notes for a million of dollars more. The President, Cashier, and other conductors of the bank were a few individuals from New York and New England. "None of the citizens" says a letter to the Ohio Statesman, "of the place have ever had any office in the bank except as directors, each of whom, it is said, held stock to the amount of ten dollars. On the 25th ult., Farrington (the then president and proprietor of the bank) was arrested on charge of obtaining money under false pretences, and held to bail in the sum of \$500. On the 26th ult. he was again arrested on a charge of uttering and passing forged notes of the bank of Gallipolis, and on examination was held to bail in the sum of 100,000, which he was unable to give, and has been committed to the jail of the county."

We were shown yesterday a letter from Cincinnati stating that quite a panic existed there, owing to the failure of the Bank of Circleville, supposed to be another New York swindling shop. Large amounts were offered for sale at ruinous rates of discount. Brokers, however, refused to buy at any price.—*Whaling Times.*

A large business is done in Boston in shipping ice for southern ports. Last year 33,000 tons were shipped from Boston and Charleston. This year the exportation will probably amount to 40,000 tons, employing 133 vessels. Nearly all this supply is yielded by two ponds.

The propositions before the lower house of the Massachusetts Legislature to indemnify the proprietors of the Charlestown Nunery, destroyed by a mob a few years ago, has been indefinitely postponed, by a vote of nearly five to one. The number against it however does not diminish the justice of the claim.

We learn from Capt Collier, of the bark Hobart from the coast of Africa, that all the slave factories had been broken up by the British cruisers.

The *Madisonian*, of Saturday, publishes the following extract of a letter, dated, Halifax, [N. B.] Feb. 19, 1841. "Several regiments have been ordered to New-Brunswick, and we are informed that orders have been sent from the home government to the West India, to embark all the regular troops there for this place; the islands to be garrisoned by the militia.

The Legislature of Kentucky have passed a resolution offering a reward of \$3000 for the discovery of the cause of milk sickness in cows at any time within five years.

In the appropriation bill, some salutary reduction and limitations have been imposed by the House of Representatives, on the excessive indirect emoluments of collectors, postmasters, district attorneys, marshals, clerks, &c. &c. Some of the most fortunate of those officers have, recently received severally from 10,000 to 60,000 dollars a year. This point of time, or turning of the political tide, when one party is just about to go out of power, and another to come in, is the most favorable juncture, to repress gross abuses, and it has been now, advantageously used for that purpose—and whatever may have been the motives, so far as they go, the results will be excellent. An out-going party, when surrendering the spoils to their opponents, will of course be very willing to lessen the profits of offices which they cannot expect to possess; and the in-coming party will be ashamed, so soon, to object to reforms, which they had been calling for so loudly. Either a year earlier or a year later, these salutary reformations of abuses would be much less easy to effect.

An able letter from a Boston merchant to Gov. Porter, on the condition of the Pennsylvania banks, and his action thereupon, has the following passage. "A suspension of payments in specie is a breach of contract, a state of discredit and dishonor, which, if tolerated at all, should be considered as a deplorable calamity, the result of a dire necessity, and only to be submitted to for the shortest possible period. The idea that resumption can be attempted too soon, that a depreciated currency will cure itself, that any course of trade will bring specie where its use is dispensed with, are amongst the oft repeated fallacies, which all experience confirms as such. The depreciation of a paper currency issued by banks considered solvent, arises wholly from its excess. The only remedy is its contraction—its reduction in quantity."

On March 3d., the legislature of Virginia, elected the Hon. Wm. S. Archer, senator of the United States.

A prodigious croud of visitors, from all parts of the United States, had assembled at Washington to be present at the inauguration, of President Harrison, on the 4th instant. On that occasion, there must have been assembled together more hungerers for, and expectants of loaves and fishes, than had been at any previous time since the miraculous provision of them for the multitude in the wilderness of Judea.

Since our last report, United States Bank stock was sold as low as \$16, but since, the price has recovered a little.

Judge Peter V. Daniel, of the United States Circuit Court for Virginia, has been appointed to the vacant seat in the Supreme Court, and Judge John Y. Mason of this district, has been chosen to fill the place vacated by Judge Daniel.

By last night's mail (March 5) received the "European," printed in Liverpool, Feb. 10, and brought by the President steamship, which furnishes the following items:

Advices from Canton were, to November 3, gloomy.

Apprehensions were entertained by the English of the final result of the negotiations with the Chinese authorities. It was supposed that the British commander would be duped, and his conduct was severely censured. The British troops holding the Island of Chusan were very sickly—out of 3650, there being only 2036 fit for duty.

The Earl of Mountcashel (Feb. 8) had brought the case of McLeod before the House of Peers, and spoke highly in reprobation of his treatment. In reply to his inquiries, the premier said that he "might rest assured that every measure would be taken that was necessary to secure the safety of her majesty's subjects, and to uphold the honor of the British nation." The subject had been debated more at length in the House of Commons.

The cotton market had declined a little—owing to the difficulties of the stock and money market.

*Saturday, March 13th.*

All the nominations to places in President Harrison's cabinet were confirmed by the Senate.

M. Daguerre has announced that he has succeeded in making the photographic plates so sensitive as to receive an impression in less than a second; and that, in consequence, he is able to receive the forms of all moving objects, as perfect as those of things stationary.

British cruisers continue to exercise, illegally, the power of search on American vessels, suspected by them of being engaged in the slave trade. The following is the latest example: "A letter, written at sea, on board the brig Cherokee, Capt. Webb, of Salem, dated Dec. 27, 1840, states, that a few days before they reached the Cape, the brig was overhauled by her Britannic Majesty's brig of war Curlew, and, after a full examination of the Cherokee's papers, her hatches were torn open, under pretence of searching for slaves!"

*Branch Georgia R. R. Bank.*—We observe in the reports of the exchanges in Columbus, that the bills of the Branch of the Georgia Rail Road Bank in this city, are quoted at 15 per cent discount, and, as the bill holders in the western part of the state may be led astray by this quotation, we take this occasion to assure them, that the Branch is paying specie, and will continue to do so, and as a consequence, her bills are worth as much in this city as the bills of any other city bank.—*Aug. Chronicle.*

In strict accordance with our rule of interpreting such bank notices as the above, the bank in question stopped specie payments immediately after, and so effectually and undoubtedly, as to make an official publication of the fact.

The very interesting case of the Spanish vessel *Amistad*, and the Africans who captured her, is at length decided by the Supreme Court. The National Intelligencer says, that "the judgment of the district court of Connecticut was affirmed in every particular, except as to sending the negroes back to Africa. They are, by the decision, to be discharged, as free men."

The regular New York correspondent of the National Intelligencer, (date March 9th) says: "The money market [city of New York,] is in a very unsettled state. The attempt to discredit the bills of the Free Banks has been so far successful, that most of the brokers refuse to buy those of the Buffalo Banks, and some others. The notes of the rest of the country banks are at 3 to 5 per cent. discount. This cannot last long. The rate must come down, or the banks will be run upon for specie." These words of *bank language*, put into *plain English*, mean that all the country banks of New York are on the eve of avowed stoppage of payments. We suspect that the city banks will follow.

The business men of Richmond (i. e. borrowers,) are very anxious for the banks there to abandon all pretence of paying specie—as that pretence invites the demands of brokers, and lessens the amount of loans. Have a little patience gentlemen—your wish will be completely gratified, as soon the law of indulgence now before the legislature shall have passed.

It is stated that the notes of the Union Bank, Buffalo, are no longer redeemed by the agent at Albany. [*Jour. Com.*]

The Raleigh Register of the 6th says, that the North Carolina Banks have again suspended specie payments—or *confessed* having done so, as we would say. So they go—and so they will go. The pretence of paying specie by a bank will soon be held as ridiculous, as would be the claim of chastity by an inmate of a brothel.

*Saturday, March 20.*

The Richmond Compiler, after stating the recent (acknowledgment of) suspension by the North Carolina banks, adds,—“Our banks stand now pretty much alone. If they can continue to pay specie while there is no place whence they can draw specie to restore that they pay out, and, what is worse, exchange with New York, *five per cent.* against us, and render the proper aid to trade at the same time, they will do wonders.” There is a still greater wonder re-asserted in the above passage, with the absurdity and impossibility of which our friends of the Compiler are not yet impressed; that is, that the notes of the banks of Virginia, if truly paying specie, as asserted, should be *five per cent. below par in New York*. But, upon our ground, maintained throughout, that our banks do not pay specie, the high price of exchange ceases to be a wonder. The history of the world presents no such bare-faced and manifestly false pretension, as this of specie-paying by banks being so universally, (in appearance at least,) received as true by the community. In a week or two the miserable pretension will be dropped by the banks.

The Bank of Western New York has suffered \$13,000 of its notes to be protested. It is said to be the intention of the bank to bring its business to a close.

The Council of Wilmington, Delaware, have passed an ordinance for issuing bills or drafts of a less value than one dollar.

The Senate of the United States have adjourned after a few days of session under the new administration, to pass upon executive nominations to office—which have not been many.

Blair and Rives, editors of the *Globe*, have been discharged from their fat office of printers to the Senate of the U. S., by a recent vote of that body. The debate on this question produced a melo-dramatic scene of quarrel, defiance, challenge and acceptance, and, finally, of public reconciliation, between Mr. Clay, of Kentucky, and Mr. King, of Alabama, which formed the principal interest of the short extra session of the Senate.

By proclamation, dated March 17, the president of the United States has called an extra session of Congress on May 31st. The subject of discussion and action, and the results of this session, will be more important than those of any session since the first under the present constitution.

The Baltimore American, a highly respectable paper, which belongs to no party, but is certainly favorable to the new administration, states that the following will be the prominent measures recommended by the new administration to Congress:

“1st. The repeal of the Sub-Treasury Law.

“2nd. The imposition of a tariff of duties sufficient to meet the expenses of the General Government.

“3d. The adoption of a plan for the distribution of the proceeds of the public lands.

“4th. The adoption of some plan or system for the safe keeping of the public moneys.”

The total number of the United States Army is 12,577 men.

The Legislature of Virginia has passed the “inspection law,” proposed to meet and guard against the procedure of the government of New York. It will not go into operation until May, 1842.

The annual bill for indulgence and indemnity to the banks has passed the legislature of Virginia. It is

scarcely worth while to trouble ourselves, or our readers, as to the provisions, as they are doubtless just whatever the banks ask for and propose. It would save much trouble if the banks were permitted to make directly, as they do indirectly and ultimately, all laws for their own regulation.

On the night of the 12th, and morning of the 18th inst., a storm did much damage at New York, and along the coast. The New York pilots say it was the severest known for 27 years.

By the following extracts from the Albany Argus, it seems that the speedy stoppage of the New York country banks, (which in New York, is called *bank-ruptcy*) which we predicted in our last paper, is already well advanced.—Ed.

"The panic in relation to 'red back' [free bank] notes, which has pervaded the public mind for several days, may be said to have reached a crisis yesterday. Down to Monday inclusive, 13 of these institutions had stopped payment, viz:

Millers' Bank of Clyde; Farmers' Bank of Seneca county; Tonawanda Bank; N. Y. City Trust and Banking Co. (fraud); Tenth Ward Bank, Chelsea Bank, Staten Island Bank, and Washington Bank, N. Y.; Erie County Bank, and Union Bank, Buffalo; Bank of Western N. Y., Rochester; Farmers and Mechanics' Bank, Batavia; Binghamton Bank.

On Wednesday, the following were thrown out by the agents [of these banks] in this city, viz.: Bank of America, and Merchants' Exchange, Buffalo. And finally yesterday, (Friday) the explosion became general, and the agents threw out the following:—Mechanics' Bank of Buffalo, United States' do.; Phoenix Bank do., Bank of Commerce do.; Bank of Brockport; Cattaraugus County Bank; Bank of Lodi; St. Lawrence Bank."

The Philadelphia Ledger of 17th says—

"At New York, the panic in reference to the 'red back' notes continues as great as ever. They were all yesterday, or nearly so, refused by the brokers. The Farmers' Bank of Geneva and the Delaware Bank are the only ones which continue to be redeemed. It is highly probable that a great number of these banks must inevitably wind up. Many of the Safety Fund Banks are rejected. Most of the Buffalo, the Clinton Co., and the Commercial Bank of Oswego."

The New York correspondent of the Madisonian (of 17th) says that the notes of following New York banks, are selling at from 30 to 50 per cent. discount, viz.: "Binghamton, Farmers', Seneca Co.; Miller's Clyde; Farmers and Mechanics', Batavia; Manhattan Exchange; North American; North: United States Trading and Banking; Staten Island, Port Richmond; Union, Buffalo; and Western New York, Rochester." "Notes of as many as twenty other (N. Y.) banks are not bought by the brokers"—being in still worse credit.

By the heavy rains and rise of waters, much damage has been done to the Charleston and Hamburg railroad, by the carrying away of bridges, embankments, &c., and more was expected. A large part of the town of Hamburg was overflowed.

Virginia Bank stock sold at auction in Richmond lately, at 76. Farmers' Bank stock, at 90½. James River and Kanawha scrip, at 85.

March 27.

F. W. Gilmer, governor of Virginia, resigned his office on the 19th. We feel, in common with the great body of the people, and their representatives also, great regret for the loss of a chief magistrate, who has so ably and zealously sustained the rights and interests of Virginia. No successor has been elected; and the senior councillor will act as governor.

The Legislature of this Commonwealth adjourned on 22d, after a session of one hundred and twelve days, during which time the pay of members amounted to \$75,264.

The Harrisburg Reporter says the banks will get

no indulgence, and may therefore prepare to do as individuals have to do in cases precisely similar. Since, the bill for legalizing in the last fraudulent suspension (such as has passed almost in silence in Va.) has been rejected by the legislature of Pennsylvania. We trust they may not relax.

The Central Railroad of Georgia was opened on the 11th instant, for the carriage of freight to the thirteenth station, a distance of 135 miles from Savannah.

The freshest in the South.—The Charleston Patriot of Wednesday last says, the whole low country about 50 miles from Charleston, on the Savannah route, is covered with water. The inhabitants have been forced to leave their dwellings, and most if not all the bridges on the road have been carried away and a great number of cattle in the vicinity of Edisto river have perished.

"We understand," says the Milledgeville Recorder "that the banks of Columbus have suspended specie payments. We have not seen the reasons for this course stated—the mails from that quarter having been stopped by the late inundation—but understand the only cause to be, to preserve for their community some circulation, which it was found impossible at that point to do, but by a suspension. All west of that point being in a state of suspension, the bills of the Columbus banks were hoarded and sold for a premium, not only to our own citizens, but to the whole trade of the states west of it, and brought immediately to the counters of the banks for exchange or specie. Considering the acknowledged soundness of these banks, and the ability of their management, and that whilst they have felt it their imperious duty to suspend more as an act to preserve their community than from any other cause, we believe now that the resumption law will be maintained but by few banks in the state." In other words, all the banks of Georgia, were on the eve of confessing, what the depreciation of their notes sufficiently showed before, that they did not pay, and had not paid specie. The words we have italicized above will suit all such junctures. Bank suspensions are always dictated by pure patriotism and benevolence, and never by self-interest.

The President of the United States has notified, through the heads of departments, that all interference of office-holders in elections, other than giving their own votes, and any pecuniary defalcation will be held as good ground for removal from office. An excellent rule, if fully executed.

The Africans of the Amistad have been discharged, in pursuance of the decree of the Supreme Court, and some of their white friends are already quarreling, and have gone to law, for possession of the minors among them. Whether minors or majors, we suspect that the poor savages will find freedom in Connecticut more intolerable than slavery in Cuba.

Latest foreign accounts.—The Steam-ship Caledonia arrived at Boston on the 20th, in 15 days from Liverpool. There is no very important news.

There was no material change in the prices of cotton. An American ship for this country—the Gov. Fenner—was run into by the steamboat Nottingham on the 20th ult. and sunk—every soul on board but the captain and mate perished! One hundred and twenty-two lives lost! The passengers were principally Irish emigrants for this country.

There is nothing further from China.

The Circassians have gained further victories over the Russians. France is disarming.—*Madisonian*.

The panic in regard to "Red back" money in New York is subsiding, but about a dozen of the banks must be wound up.—*Id.*

At this moment the whole commercial world is in debt to New York. The rates of exchange prove it. While those states which adopt the expansive and suspensive policy find themselves in debt to every body and trusted by nobody, the effect of the opposite

policy has been to draw capital and property here from all directions.—*Jour. Com.*

The last accounts from Florida (dated March 13th) state the war to be nearly brought to a close. About 400 Indians (men, women and children) are confined at Tampa, waiting to be embarked for Arkansas. Lieut. Albertis has recently gained the victory in two skirmishes with the savages who still hold out; and they are expected to be compelled soon to yield themselves prisoners.

The bad debts due to the Bank of the State of Alabama, and its branches, are officially reported by a committee of the legislature to amount to the enormous sum of \$4,640,761. The loss will be suffered by the state.—*Ph. Ledger.*

#### TO CORRESPONDENTS AND READERS.

The editor has been suffering more or less under indisposition for the last three months, and recently has been so ill as to be unfit for any exertion of

mind or body. The favors and the orders of his correspondents have therefore been unavoidably neglected or postponed; and perhaps other more important editorial duties have been even still more imperfectly performed. He hopes that this statement will serve to excuse all such apparent deficiencies. Sundry postponed communications will appear in the next number.

The mechanical operations of our printing establishment since January 1, have also been much retarded by sickness, causing the loss of much valuable labor which could not be replaced, and while the demands for work have been peculiarly heavy.

The second number of the 'SOUTHERN MAGAZINE AND MONTHLY REVIEW' is ready for delivery.

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# THE FARMERS' REGISTER.

VOL. IX.

APRIL 30, 1841.

No. 4.

EDMUND RUFFIN, EDITOR AND PROPRIETOR.

## AN ESSAY ON THE CULTIVATION OF CORN.\*

From the Kentucky Farmer.

Indian corn is a grain so necessary in raising and fattening stock, that it must ever be regarded as very important, in any system of agriculture, suitable for the western country. Though an exhausting crop, it may be raised, for a succession of years, upon the same ground. But although a rotation does not appear so essentially necessary in this, as in some other crops, yet the *fact* of a continued cultivation of this grain, even upon our richest land, for a succession of years, gradually deteriorating the soil, and diminishing the annual product, should admonish the husbandman, that a different system ought to be pursued. It should be a settled principle, with every farmer, so to cultivate his land, as never to *deteriorate* his soil. He should constantly aim at *improvement*, as the best and most certain means of preventing *deterioration*. The first consideration, therefore, with every farmer, should be to adopt such a system, in the cultivation of corn, as will not only prevent his soil from being *reduced*, but will gradually *increase* its fertility, and the product of his crop. The means, by which this may be accomplished, depend very much upon the native qualities of the soil, and the degree of deterioration it has undergone.

To treat this subject in a practical and useful manner, it is necessary that we should distinguish between the white oak lands, of the west, having a clay soil, with little or no vegetable mould on its surface, and the rich calcareous soils, having a deep vegetable mould, with a sub-soil of clay, founded on limestone rock. The latter, in its native state, is extremely fertile, and very productive in corn. But most of the lands, of this description, in Kentucky, have been so long, and so unskillfully cultivated, as to have considerably reduced their fertility. Yet experience has shown that they may (when the soil has not been too much washed off,) be restored to their original fertility, by a proper system of cultivation. This *renovation* may be accomplished by a judicious system of *grassing* the land, and restoring to it, in the form of manure, as nearly as practicable, every thing which is taken from it by the growing crops. Ground which has been much exhausted, should, after a wheat crop, be set in clover, by sowing, about the middle of February or between that and the first of March, among the growing wheat, one-tenth of a bushel of clover seed per acre. It should be suffered to remain three summers under pasture, exclusive of the one in which the wheat is harvested. In the third year the clover should be permitted to go *unpastured* from the first of July until about

the time the clover ripens,\* when it should be turned under by a well-constructed plough, so as to bury every part of it. The better to accomplish this, a harrow, with the teeth reversed or a heavy brush should be drawn over the clover so as to lay it flat, in the direction the ploughs are to run. A harrow should follow the ploughs to fill all the interstices, in order the more completely to cover up the clover. During the winter, while the ground is frozen, a dressing of manure (as far as the farm will furnish it,) should be hauled over the ground, but left in heaps till the proper time for ploughing, when it should be spread and *immediately* ploughed in. The field, thus improved, might now grow two crops of corn in succession, and then be again sowed in wheat and clover, and treated as in the first instance.

A second field, in the mean time, might undergo the same system of improvement, and so on in succession, till all the cultivated land shall have been *renovated*. If the soil is naturally rich, and has not been much reduced by cultivation, instead of three crops of clover in succession, two might be adopted, when the rotation would be as follows, clover, clover, corn, corn, wheat. This rotation would require five fields, two of which would be annually in corn, two in clover, and one in wheat; so that in every five years each field would produce two crops of corn, two of clover, and one of wheat.

But if the soil has been much reduced, a shift of six fields would be necessary, and the rotation as recommended above, to wit: three years in clover, two in corn, and one in wheat, which would leave three fields annually in clover, two in corn, and one in wheat. This rotation, with a judicious application of manure, would gradually renovate any of our naturally rich calcareous land, where the soil has not been washed off. When land is naturally rich, and has not been much reduced by bad husbandry, the following rotation will be found very convenient and profitable, particularly for small farms. Corn, wheat, clover and so on in succession. This will require but three fields, and the farmer will every year have one field in corn, one in wheat, and one in clover, besides the advantage of pasturing the clover after his wheat comes off. But the clover must be suffered to go unpastured after the first of July, and be ploughed in, as herein before directed. This will not only provide a good dressing of manure for the succeeding corn crop, but will cover up such a quantity of clover seed as will furnish an abundant supply for the wheat crop, which is to succeed the corn crop. One

\* In a letter addressed to the Rev. H. Colman, agricultural commissioner of Massachusetts, by Professor Samuel L. Dana, and published in the 48th and 49th numbers of the Franklin Farmer, for the year 1840, it is shown, very satisfactorily, that ploughing in green crops is not as beneficial to land, as ploughing them in after they become thoroughly dry?—This is a recent and important discovery. The ploughing in of the second crop of clover should, therefore, be delayed until it is not only ripe, but completely cured.

\* This is one of four essays on different subjects to all of which were awarded the highest prize offered by the Kentucky State Agricultural Society. The author, Judge Beatty, is one of the most judicious and successful practical farmers in Kentucky.—Ed. F. R.

great advantage attending this rotation is, that it wholly saves the expense and trouble of sowing clover seed among the growing wheat. It also affords two grain crops in every three years. This, in England, would be considered as too exhausting. But I am persuaded our rich lands of the west, which have not been much reduced by bad husbandry, will bear this course of cropping without deteriorating the soil, especially if an upper dressing of manure is applied, preceding each corn crop, that is to say every third year.

In clay soils the corn crop should occur less frequently. The rotation, in a shift of four fields, might be clover, clover, corn, wheat. Or, where the soil is naturally thin, or has been much reduced by bad husbandry, the rotation might be three crops of clover and one of corn, and one of wheat. Clover should, in these courses, be the preparatory crop for corn, and ploughed in as herein before directed, and a top-dressing of manure be applied, to the extent the farm will afford. In clay soils the wheat crop should be assisted by a dressing of plaster of Paris, (sulphate of lime,) from a peck to a bushel per acre. If the smaller quantity only is applied, it may be stirred in the wheat, having been previously moistened for that purpose, when about to sow. If the larger quantity is used, (and it is best to do so, if to be had,) it should be sowed broad cast, at the time of sowing the clover seed, in February. The corn crop will also be much improved by applying half a table spoonful to each hill of corn, either at the time of planting or as soon as the corn comes up.\*

For farmers who do not desire to raise wheat, the following rotation will be found convenient and profitable. Upon rich lands, which have not been much reduced by bad husbandry, corn, corn, rye, rye, the two latter to be fed off *on the ground*. In this course, the second crop of corn will be followed by rye, sowed in the fall, pastured the next winter and spring, till the 15th of April, and then suffered to go to seed. When ripe it should be fed off to hogs and other stock *on the ground*. About September, or so soon as the fall rains cause the remains of the rye on the ground to sprout, the stock should be taken off. There will be sufficient rye left to seed the ground, and so soon as it shall have attained a sufficient growth, it may again be pastured through the following winter and spring, till the middle of April, when it should, a second time, be suffered to go to seed and be fed off as before, until the proper period for removing the stock. It may again be pastured during the following winter. But care should be taken not to leave stock on after the frost gets out of the ground, as this would cause the soil to break up cloddy and render it less productive. By the time the ground becomes dry enough for ploughing, there will be a thick coat of young rye, which, if well turned under, will afford a light dressing of manure for the succeeding crop of corn.

This rotation will require but two fields, and will be very convenient to hemp growers and graziers, who do not wish to cultivate wheat crops. In consequence of the rye being fed off upon the ground, the foregoing rotation will rather

improve than exhaust the soil. But to restore, speedily, that which has been exhausted, there should be two crops of clover, succeeding the rye crop; or a third crop of rye may be raised to advantage, by ploughing the ground after the second crop is fed off, from the first to the middle of September. Rye will not do well the third year without ploughing the ground, in consequence of white clover and other grasses spreading over the ground, but a single ploughing may suffice for two additional crops of rye.

Where the practice of grazing extensively prevails, large portions of the grazier's farm are kept in blue grass, and pastured for a number of years in succession. These pasture grounds, often having been kept a long period in grass, are occasionally ploughed up, and planted in corn. This is certainly a fine preparation for that crop; and if the period, during which the land is kept in grass, in proportion to the time it has been in corn, be considerable, it is well adapted to the improvement of land. But if proper care be not taken in ploughing a stiff blue grass sod, there will be great difficulty, in cultivating the corn crop. If, however, the proper method is adopted these difficulties may be avoided. There are two modes of converting blue grass sod into arable ground, which may be practised to advantage. One is to put a strong team to a large plough, suitable for turning over a stiff sod. The plough should have a cutter attached to it, for the purpose of cutting the turf, and thus enable the plough to turn it over to the depth of five or six inches, and lay it so smoothly as to have the grass side flat, and the mould alone exposed. The harrow should follow in the same direction with the plough, and by running several times over the ground the interstices will be filled up and the turf so completely buried that the grass cannot readily grow. If this operation be performed in the fall or early in the winter, the sod will be so completely rotted, by the time it is necessary to commence ploughing for corn in the spring, as to admit of its being stirred advantageously. But if the sod be turned over in the spring, then it will be proper, by repeated harrowing, to form a sufficient depth of mould to admit of laying off the ground for corn without turning up the sod. By using light ploughs and small harrows, to run between the corn, or the corn cultivator, the crop may be cultivated without turning up the sod, and with very little labor. By the following year the sod will be completely decomposed, and will leave the ground mellow and in fine condition for a crop.

If the operation of turning the sod be well performed, this mode of cultivating corn will be attended with great advantages. The sod beneath will keep the ground light, and the yield, if the season be favorable, will be very large. If, however, the land do not lie favorable for turning sod, (if for instance, the ground is so situated that the sod must, in part, be thrown up hill,) it may be difficult to turn it over so as to bury the green sward. In that case it will be very troublesome to cultivate.

The other method of managing blue grass sod is more effectual in obviating the difficulties arising from the unfavorableness of the ground for turning sod, and ought to be preferred by all farm-

\* See a long note on the benefit of plaster of Paris, in the general essay on agriculture.

ers, who have an opportunity of procuring suitable implements.

A properly constructed plough with a *cutter* attached to it, should merely skim off the green sward to the depth of an inch or two, which should be followed by another plough, running in the same furrows, to throw up the mould to the depth of five or six inches. Thus, after the first round, a deep furrow would be formed, into the bottom of which the skimming plough would throw the green sward skimmed off in the second round, which would be covered to the depth of five or six inches by the second plough, and so on in succession, till the whole field is ploughed. In this way the green sward is detached, and buried so deep that it need not be disturbed in the process of cultivating the crop. Being entirely covered, it will serve the double purpose of keeping the ground light and furnishing a dressing of manure.

If the same ground upon which corn has been cultivated the preceding year, is intended to be again cultivated in corn, it is very important that it should be trodden as little as possible by stock, especially when the ground is rendered soft by rains, or by freezing and thawing. Instead of feeding upon the ground the small remains of fodder which are left, after the corn is pulled, it is much better to cut up the corn, and put it in shocks, after it is fully ripe. The fodder may be fed off, either with corn, or after the corn has been *shucked*, according to circumstances. If the corn has been detached from the fodder, the latter ought to be fed in suitable feeding pens, with a view to the saving of manure. And it would always be advisable to haul it off, in large slides, having suitable shelving, when the ground is either frozen, covered with snow, or not too much softened by rains. That there may not be a necessity of hauling fodder when the ground is so soft as to injure it by treading, a suitable time should be selected for hauling and putting in rick, a quantity of fodder, to be kept as a *reserve*, and to be fed from only when the weather is not suitable for hauling from the field. The rick should be made by setting the fodder against poles, and should, of course, be as convenient to the feeding pen as possible.

The cutting up of corn, and removing the fodder to feeding pens would not only occasion the saving of much manure, but would leave the field in good condition for early ploughing, thus affording the ground the benefit of the spring frosts which will greatly assist in pulverizing the soil. But a still greater benefit would result from preventing the corn ground being trodden by stock, when in a soft state, during the winter and spring months.

If ground has been sufficiently renovated and properly prepared for a crop of corn, the process of cultivation is very simple. The ploughing should be deep and thorough, and if practicable, early enough to afford the ground the benefit of the spring freezes. If ploughed early in the winter, or late in the preceding fall it would be still better, as the soil would be thereby more completely pulverized, a matter of great importance in the culture of the corn crop. Except where sod is turned over, the ground should be suffered to lie in a rough state till about the time of laying off for planting, and should be then well harrowed,

taking care that this operation be performed when the ground is sufficiently dry to pulverize well. The harrowing will destroy any young weeds which may have sprung up, and will level the ground preparatory to checkering it off for planting. It should now be laid off one way at the proper distance for planting, with a large plough, cutting the furrow as deep as can be conveniently done. A second plough, suitable for the purpose (a well constructed shovel or coulter plough will answer) should follow in the same furrow, to loosen the ground as deep as possible. When a field is thus laid off one way, it should, as soon as convenient be crossed in the other direction for planting, leaving the rows equally distant each way. The laying off for planting should be done with a small, steady running one horse plough, which should not cut a furrow more than two or three inches deep. This method would leave a deep loose soil at the intersection of the two furrows, and would remove the clods from the furrow so as not to be in the way in covering corn. Careful droppers should follow the plough, or ploughs, laying off the second way, who should be particular to drop the corn *precisely* at the intersection of the two furrows, and the hands following with the hoes should be careful to cover the corn with fine mould, (cutting the clods from the hill, if any) precisely at the place where it was dropped, except when they discover an error in dropping. Attention to the foregoing directions is important for two purposes. 1. That the corn may be planted where it will have immediately beneath its roots a deep loose soil, which they can penetrate with ease; and, 2. That the rows of corn may be straight, *both ways*, and thus enable the ploughs with very little aid from the hoes to keep the corn clear of weeds and grass. A shallow furrow in laying off the second way is attended with several advantages. 1. The ground is not so apt to *wash* during heavy rains, as when the furrow is broad and deep. 2. The clods will not so readily fall back into the furrow. 3. The corn will not be so liable to be covered by clods rolling on it at the first ploughing, in consequence of there being a greater width between the furrows.

There are various opinions as to the proper distance at which corn should be planted. This must depend upon the nature of the soils, its degree of fertility, and the *number of stalks left in a hill*. My own experience inclines me to the opinion that four feet apart, each way, and three stalks in a hill, is the proper medium for the rich calcareous soil of Kentucky, having a deep vegetable mould. This would give 2722 5-10 hills, 8167 stalks per acre, supposing each hill to have its full complement. It would be prudent to drop four or five grains in each hill, and thin the corn at the proper period, to three stalks in each hill. If large corn be planted, each hundred good ears, in *ordinary* seasons, will be equivalent to a bushel; and, consequently, if each hill will average three ears (the double ears will usually make up for the missing stalks) the product will be 81½ bushels per acre. If the season be favorable, the yield may be still greater.\*

\* I have gathered a part of my crop for the present year, planted and cultivated as above directed, and the product is from 95 to 100 bushels per acre. The early



But if the ground has been much reduced by bad husbandry, or the corn be planted in a clay soil, it should be thinned to two stalks in a hill. This would give 5445 stalks to the acre, if none be missing, and a product of 54 45-100 bushels. supposing each hundred ears to make a bushel. But it must be recollected, that if the soil is not good the ears may be less, and the product consequently diminished.

If oak land be of the poorer kind, it may be necessary to increase the distance. If  $4\frac{1}{2}$  feet should be deemed necessary this would give 2150 hills, and 4300 stalks per acre, allowing two for each hill.

Ground may be so very poor as not to be capable of sustaining more than one stalk in a hill. It might then be planted four feet each way, which would give 2722 stalks per acre.

Some farmers are of opinion, that *drilling* is a better method of planting to secure large crops. With extraordinary care in planting and cultivating a small crop, it is probable a larger yield may be obtained. But the advantages of a small increase of product *per acre* will not be equivalent to the increased labor in cultivating the corn, cutting, shocking, hauling of fodder, &c. I would, therefore, by no means recommend the drilling of corn as a general practice.

When planted in squares it can be ploughed both ways, be better cultivated and with much less manual labor. As soon after the corn is planted as practicable, a single furrow with a shovel plough should be run between the rows, in a direction opposite to that in which it was planted. This is an effectual security against the corn being washed up by heavy rains, and prepares the ground for the next ploughing, which should be in the direction in which it was planted, unless the ground be very foul. In that case it may be proper to run two additional furrows in which the shovel plough had previously run, throwing the dirt from the corn.

If the ground be tolerably level, and have but few stumps in it, a large harrow may be used to advantage, when the corn is about four or five inches high. The horses by which the harrow is drawn should be made to walk between alternate rows, and the harrow dragged over the corn, having previously removed such of the teeth as would come in contact with the young plants. This process is deemed very important by some farmers in the cultivation of the crop; and where the ground is very weedy, is well calculated to keep them under till the corn is large enough to hoe. But if the ground in which the corn is planted has been sufficiently freed from weeds, and properly prepared by previous ploughing and harrowing, the after harrowing may be dispensed with.

A small barshare, Dudley, or coulter, or McCormack plough may be next used, running the bar next the corn, and throwing the dirt in the middle. The hoes should follow to clear the hills from weeds and grass; or, if they be very small, cutting away those adjacent to the young plants, and covering up those standing in the hill, by drawing some light mould around the corn. It is very important in this stage of the crop to de-

stroy the weeds and grass growing among the young plants. If the operation be well performed the plough alone will be sufficient afterwards to keep the corn free from weeds and grass.

Various opinions are entertained as to the best kind of plough to be used in the cultivation of the corn crop. After the ploughing which is accompanied by the hoes, I have used the shovel plough in preference to all others. It is the most economical, being the least expensive, in the first instance, and costs less to keep it in repair. It requires a narrower head land at the end of the rows for turning, and in consequence of the ease with which it can be managed will break down less corn. It ploughs deeper, throws a wider furrow, leaves the ground in a state less liable to wash, and works the corn better, and does more work than any plough I have tried. It must be remarked, however, that if corn ground is allowed to become foul with grass, especially foxtail, the shovel plough will not answer as well as some others, after the grass has obtained a complete set, and a luxuriant growth. But if taken in time, no plough answers better to keep it under; and corn should be ploughed so frequently as to prevent grass from getting to such a size as not to be easily destroyed by stirring the ground. It should be ploughed alternately, each way, and deep enough to cut the roots between the rows. This, so far from injuring the corn, will much assist its growth, as young roots will quickly shoot forth, whenever the old ones are broken, and these will furnish nutrition to the growing corn more rapidly than the old ones. In a word, there need be no fear of injuring corn by cultivating it too much, if care be taken to work it only when the ground is in proper condition. My experience is not sufficient to enable me to speak of the cultivator as a substitute for the shovel plough. It is well worthy of trial, and where the ground is free from stumps, or nearly so, it might be used to great advantage in preparing corn ground for sowing wheat, and in putting in that crop, as it would leave a more level surface than the shovel plough. But if the plough should be preferred, so far as my experience extends, next to the shovel, I would recommend the Dudley plough. This is somewhat like the McCormack plough, except that it is made of wrought, instead of cast iron, and is in one entire piece, instead of having a detached mould board. In that respect it has the advantage of the McCormack plough, which, at the joining of the share and mould board, cannot make so nice a fit, as where it is all in one piece. It is also lighter and scours, or wears smooth, and kept so much easier than cast iron mould boards, the latter being much more liable to rust than wrought iron. Its greatest disadvantage is the difficulty of repairing by unskilful smiths.

The number of times corn should be ploughed, must depend upon the nature of the soil, and other circumstances, of which the judicious farmer will be the best judge. In grass lands, which are generally, in a great degree, free from weeds, three or four ploughings may suffice; in very weedy ground, five or six may be necessary. In general nothing is lost by frequent ploughing, as the crop will be better, and the weeds will be prevented from seeding the ground, for a future crop.

part of the season was entirely too wet, but after the 1st of July was very favorable.

Many farmers cease ploughing their corn at the commencement of harvest. The consequence is that the weeds run to seed, and ripen, which not only injures the crop, but unnecessarily exhausts the ground (for all vegetables exhaust much more at the time of ripening their seed than at any other time,) and moreover furnishes a crop of seed, for the ensuing year. Corn should always be ploughed, at least *once*, and, if very weedy, *twice*, after harvest. The intervals between the ploughing, after the hoeing operation is completed, should not exceed from eight to twelve days. It is particularly important to stir the corn ground *after heavy rains*, to prevent it from baking. If suffered to lie long after heavy baking rains, when the crop is in an advanced stage, the corn is very apt to *fire* when again ploughed. This is a great and serious injury to the crop, and one from which it never entirely recovers. It is very important, therefore, that it should be ploughed as soon as practicable, after each heavy rain, taking care not to commence ploughing where the ground is too wet, that is, when there is so much moisture in it as to make the soil adhere, like half wet mortar. When it is sufficiently dry to crumble into a fine mould, and not before, should the ploughs commence running, after much rain has fallen. To plough ground when very wet, is exceedingly injurious, and should always be avoided. Long continued rains will, occasionally, severely task the *patience* of the farmer, when his corn crop is suffering, but *patience*, on occasions of this kind, is a virtue which will generally be well rewarded, by an increased product of his corn crop, besides preserving his land from injury by ploughing it when too wet.

Corn is frequently injured by cutting it too green. This is done by many farmers under the mistaken idea, that the fodder will be better if the corn is cut while the blades are green. The reverse is true. If cut while the blades are green, and put in shock, the fodder will scarcely be fit for any kind of stock. Thus, by attempting to make superior fodder, the farmer frequently raises both fodder and corn. The cutting of corn should not be commenced until all the blades below, and nearly all above the ear are dry. When only two or three blades above the ear show any remains of the green color; and when such is the general state of the field, the operation of cutting up corn should be commenced, (taking care to begin with that part of the crop which is most advanced,) and should be completed as rapidly as possible, as the blades, after they become dry, are liable to injury from dews and rain. Hemp hooks are most convenient instruments for cutting. It should be cut about a foot from the ground, as it will stand much better in shocks, when the ear is brought nearer to the ground than it would do if the corn were cut close to the earth. There will also be less weight to handle in shocking, hauling, ricking, feeding &c., while nothing will be lost, that is fit for fodder. From fourteen to sixteen hills square should be put in each shock. The former will contain 196 hills, and will give nearly fourteen shocks to the acre, supposing the corn to be planted four feet apart, each way. The latter will give 103 shocks nearly per acre. I prefer the former, if the corn be large, and stands well in the hill, that is, three stalks in each. But if it does not stand regular in the hill, or

if the stalks be of moderate size, then sixteen hills square will make the shocks of a better size.

The saving of corn in the shock, without injury, depends altogether upon the manner in which the shocks are put up. If they are set up so as to stand firmly, there is no danger of the corn injuring: but if the operation is carelessly, or unskillfully performed, they are liable to twist round, and settle down, so as to leave the top open. When this happens the rain will penetrate the shocks, ruin the fodder, and greatly injure the corn. Shocks should be thus constructed. The stalks of four hills (left standing for the purpose,) should be inclined towards each other, and tied by their tops, so as to form a kind of cone over the centre between the four hills. When this is done, while some hands are cutting, those who best understand the process of shocking should gather the corn by armsful, and set it up around the four hills, thus tied together, setting the first four armsful in the intervals between the bent corn, bringing the butts so near to each other as to make the stalks occupy nearly a perpendicular position. In like manner the successive armsful should be set *regularly* all around the four hills of corn, tied as above directed, still keeping the butts well pressed together at the bottom, so that the pressure at the top towards the centre, may not be so great as to break down the stalks tied together. This should be further guarded against by placing equal quantities of corn all around, so that the pressure may be equal from all sides towards the centre. The tops of the corn stalks being smaller than the butts, they will naturally incline inwards, so soon as the fodder becomes dampened by rain or dew; but this inclination should not be very great, otherwise the shocks will not so well turn the rain; besides, as the corn may not be equally distributed all around the shocks, the pressure will be unequal towards the centre, and the effect of this inequality will be greater in proportion as the corn varies from a perpendicular position. Care should also be taken to set up the corn, so as not to give it an inclination to the right or left, or a *leaning sideways*. If this be not attended to, the shock in settling together—as it will when it becomes damp by dew or rain—will be certain to twist round, and cause the top of the shock to open, and thus expose it to great injury from the weather. This point is the most important thing to be attended to, in shocking corn, an operation upon which the complete preservation of the crop depends. That part of the corn which is not intended to be fed way with the fodder, must of course, be shucked in the field. This should be done while the fodder is damp, otherwise there will be a considerable loss by its crumbling. As fast as the corn is shucked, the fodder should again be put in shock, and this cannot be well done, when it is dry. Hence, after a damp spell, or when the weather is warm and giving, is the best time for shucking corn out of the shocks. If this operation is in progress during the feeding season, a part of the fodder may be hauled at once, to the feeding pen, and to a rick adjoining it, and so far the trouble of re-shocking may be avoided.

Some farmers do not pursue the practice of cutting up their corn, and among these, two different methods of saving their crops prevail. By some it is contended that shucking the corn upon the stalks, as they stand in the field, and hauling the

corn thence, to the crib, is the most economical, or greatest saving of labor. The practice with others is to pull their corn, haul it to a suitable place, and shuck, and then crib it. There can be no doubt that the same number of hands will, by the former method, secure in the crib, a greater quantity of the corn, in the same time, than by the latter.

The plan is, however, subject to two objections. 1st. By this method all the corn, good and bad, must be cribbed together. 2d. The shucks must either be lost, or stock turned in the cornfield to feed upon them. If this be done, the ground will be much injured by the treading of the stock, when rendered soft by rains, or by freezing and thawing. This evil may, in some degree, be avoided by turning the stock into the field *only* when the ground is frozen hard. But our winters are so open, and the changes in the weather so frequent and sudden, as to defeat almost every precaution of this kind. In point of fact we rarely see farmers take the trouble to have their stock removed at every sudden change of the weather, particularly when that change is accompanied by heavy, and long continued rains. *Comfort* is most generally consulted, on occasions of this kind, and the cattle are left to feed themselves rather than encounter the trouble and inconvenience of removing them to a place where they may be fed. And thus the ground is left to suffer rather than expose the farmer or his hands to inconvenience.

The other plan is somewhat more tedious, and (if there be no shelter under which to throw the corn as it is hauled, and to shuck it, and save the shucks,) is liable to more serious objections than the other.

If, however, the farmer will provide himself with a cheap and suitable building, under which his corn can be protected while he is gathering, hauling and shucking it; and where he can save, salt, and stow away his shucks till the time for feeding them, the latter plan will, perhaps, be entitled to the preference. Much of the corn, according to this plan, can be shucked during bad weather. It can be assorted, and the different kinds hauled to the appropriate places for feeding. The shucks can be salted, and secured from the weather, and fed away without much inconvenience in bad weather. The stock, fed upon them, will furnish some manure; and above all, this plan will keep the stock from injuring the land, by treading it when rendered soft by rains, and by freezing and thawing. If this plan be adopted, there should be a crib, for holding the *nubbin* corn, and that which is unsound, so situated that this part of the corn may at once be put into it, and thus leave none but the sound corn to be removed to distant cribs. The process of assorting the corn may thus be performed while shucking it, and the defective parts, by means of baskets, deposited in the adjoining crib; or it may be assorted as the sound corn is thrown into the wagon to haul to the appropriate crib, and put into the crib intended for it, while the wagon is unloading.

A. BEATTY.

September, 1840.

## NOTES TO THE ESSAY ON TOBACCO CULTURE.

(Continued from page 177.)

### (Note A.)

This essay is adapted more particularly to the culture of the *bright* Kitefoot, Maryland tobacco. The writer of these notes does not pretend to know any thing about the management of that particular variety, nor would he in any way call in question the views or skill of the writer, or presume himself to prescribe for its management. There are however in its culture, and process of management for market, many things in common with the practice of the best planters in Virginia, and many in which they differ. It is the design, therefore, to point out in a brief way those particulars in which they disagree. It will be borne in mind that the Maryland tobacco is sold in a very different market, and put to a very different use from that which is made in Virginia. Although in Baltimore it commands a higher price than ours, yet in Petersburg, or Richmond, it would be considered thin, chaffy, and almost valueless.

### (Note B.)

This has not been the impression of the best tobacco growers in Virginia. Owing perhaps to the peculiarity of our soil, or more probably to the dislike which they have to the thin bright tobacco, they prefer that it should not grow off too rapidly, or mature too early. It is always a matter of regret with them if the seasons force their plants so as to compel them to put them in the hills before the 1st of June—the 10th is much more preferred—though when their plants are large enough, and the weather is suitable, they avail themselves of it for fear that there may not be “seasons” as they call it, to plant out, when they might desire it. That which is planted out about the 10th or 15th of June, grows broader leaved and heavier, and is thrown back later to receive the heavy dews of August and September, which our planters consider very important to make it thicken and ripen. Our writer’s opinion, too, of the importance of rapid growth to make a fine article, will not apply to the facts of the case in Virginia. We believe, too, that it is generally conceded that the thin, poor tobacco of Kentucky, is owing to the rapid and luxuriant growth which their fertile soil gives it. Within the last few years, however, the character of that tobacco has very much improved; owing no doubt in part to the improved management, but not less is due to the improved condition of soil for that particular crop. The exuberance of fertility which formerly produced a coarse and spongy article, has been worn down to a more healthy fertility.

### (Note C.)

The practice of the best planters in the middle counties in Virginia. (and we think they grow the best tobacco in the state,) is to follow up their rich clover fields in the autumn as soon as it is well matured, letting it remain to rot till the spring, when it is ploughed and reploughed to mix the manure before hilling and planting. Some of the prettiest “pie-bald,” fawn-like tobacco we have ever seen in the field, has been made under such circumstances, and brought the highest prices in our markets. Another successful plan is to follow

in the autumn their herdsgrass meadows, (for they have their regular rotations for that purpose,) which they, by tillage, in the spring prepare for the crop. The decaying roots and vegetable matter feed and nourish the plant during its growth. They continue to cultivate their grass land for two or three years, when it begins to get close or clammy for want of the vegetable matter which has been exhausted, and which is considered so important; it is again seeded down in small grain and grass. Others again seed the land which is intended for tobacco, in oats, which, when matured, are turned in with the plough. The *volunteer* oats will perhaps seed the land for the next spring, if they are not killed by the frost, or the land can be again sown if the owner thinks it not rich enough. More than one crop however is rarely necessary to enrich it for one or two years, on land which we may suppose to be in good heart before. It is also very common to apply half rotted straw and other litter from the farm pen on the land in the spring, to be ploughed and mixed in with the soil before hilling, and thus it rots and feeds the plant while growing as under the systems before mentioned. It is perhaps useless to speak of the destructive practice of cutting down forests, so long and extensively used in Virginia for the cultivation of tobacco. As desirable as virgin soil is to the growers of fine tobacco, but few will have that kind of land left many years longer.

(Note D.)

We think that by following at the proper time in the autumn, the clover would be converted into manure, and thereby the difficulty which the writer alludes to would be obviated. There is another view of the subject which we should be glad to see discussed by some of our able agriculturists. It is this. Whether the protection from cold afforded by clover or other vegetable covering is of more service to the soil, and to the subsequent crop, than would be derived from the same covering when converted into manure by the autumnal fallow. It is the opinion of some that the freezing of land improves it, and prepares it for the coming crop. And yet it has not escaped the observation of all that wherever the land has been protected from frost by a stack, or in any other way, although no vegetable matter may have remained, to enrich it, that the subsequent crop will show the advantage.

(Note E.)

A free, light, gray, loamy soil, is preferable for the growth of tobacco—that medium texture, I should say, which was equally removed from the sand and the clay. It was remarked by a very intelligent, observant, and successful farmer, Mr. Richard Venable, of Prince Edward county, that the gray lands of that county produced the finest tobacco that he ever saw. And in connexion with the same subject, he said that the rich low grounds of James River were comparatively inferior for that crop. He thought it probable that the latter soil was more or less calcareous from deposit brought down from the lime-stone country of the Blue Ridge, and he did not think that lime-stone lands produced the finest tobacco. If this be the fact, may not the inferior quality of the article in Kentucky be accounted for?

(Note F.)

The application of water to the plant-beds by throwing it, is probably not the best mode. It is disposed to bake the land. It would be attended with much better effects if the water were dammed above the bed and conducted round it, to ooze through from little rivulets. Or another mode of irrigation, which is perhaps equally good, can be effected by placing barrels in different parts of the bed, containing water, with small gimlet holes for it to trickle through.

(Note G.)

As has been remarked by our writer, the fly is always most troublesome in cold and dry seasons. The best mode of protection which we have known, and we have thought it almost a preventive, is what the writer has partially alluded to. Warmth and moisture are the opposites of cold and dryness. The beds should be on some southern exposure, and kept in a moist condition, either irrigated, (which if only one is used is preferable,) or by covering pretty thickly with brush. We would not use pine brush, as they exclude the sun too much, and there is something cold in their nature; but simply brush, which serves the two-fold purpose of keeping the land moist and preventing it from washing, if there should be hard rains. To cover the beds over with well rotted stable manure is found to be a valuable auxiliary to irrigation. We have kept the brush on till the plants were out of the reach of the fly, or within a few weeks of planting. They are then removed to let the plants harden by the action of the sun before planting. If it is necessary to remove them for the purpose of irrigating or manuring, or hand-weeding, or trampling the beds, they must be laid on again, and when they are finally removed, it should be gradually, or during a cloudy or wet spell.

(Note H.)

The beds which are sown reasonably early, produce plants with the best roots, which is important to their living when planted out. It is astonishing how hardy the plant is when very young. Contrary to the usual order of nature, it will stand ten times the degree of cold that an old and ripe plant will.

(Note I.)

If the beds are manured with stable manure, it is thought advisable to throw it in a heap or put it in barrels, (which is perhaps the best) to ferment for ten days or two weeks, to destroy the vegetative principles in the seed. The remark of the writer about the quantity of seed necessary to be sown is very correct. Every observant planter knows that two plants, even *indifferent*, put into the hill *together*, will more certainly live than one good one planted alone. A plain old farmer of our acquaintance, who never failed of having a "stand," used to remark that "while other people were *replanting*, he was *thinning*." It is very easy to pull up one, if both should grow, or to turn one down and cover it up.

(Note J.)

The process of "*topping*" is conducted by the most skillful and prudent hands on the farm. A few leaves, say four or five, are broken off from the bottom and usually thrown away, which is called "*priming*," and then so much of the top is

taken off as will leave from six to ten leaves, (according to the season of the year and the vigor of the plant,) to grow and mature. No judicious planter would think of leaving more than ten leaves to make Virginia tobacco, though we have been told that Maryland tobacco was frequently topped as high as sixteen or eighteen leaves. If not topped too high, the upper leaves will be the largest and ripen the first. It would moreover be considered most slovenly management, and great waste of the strength of the vegetative process, to permit the plant to *button* before it is topped. Virginia tobacco, to be valuable, should be *thick*, and *rich*, and *oily*; but when permitted to button before it is topped, it is thin and chaffy.

The writer says nothing about the process of priming, by which we infer that it is not practised in Maryland; indeed we have heard it was not. Although, as we have stated, the reverse is the practice with the majority of the best planters in Virginia, yet there are some few whose success both for the quantity and quality of their tobacco would entitle them to rank with the foremost, whose practice has not been for many years to *prime*. They top as high as they would do if the priming had been done. They maintain that those leaves (which are always small and take very little nourishment from the plant) serve to protect the more valuable ones above from the dust. They are very little in the way of hilling, and if they cover one occasionally, there is nothing lost. The quantity of *fine* and *passed* tobacco is believed to be larger, and the offal, or "*lugs*," as they are called, are also increased, and the price is thought to be fully equal to that managed by *priming*. We have ourselves made some experiments on this system, for several years, and are inclined to think favorably of it. This may look a little heretical, but be it so; truth disdains to be fettered by forms and dogmas.

(Note K.)

The wood should be cut in the previous winter and hauled to the barns at convenient times before the busy season of firing tobacco begins. The wood is better, too, from being half seasoned—the fire is more uniform—there is less smoke and less sap and steam rising to coddle and scald the tobacco which itself already contains too much fluid. Large wood is best, either split or otherwise.

(Note L.)

Many of our best farmers differ in their management of tobacco after it is carried to the barn. All agree in the necessity of its being ripe before it is cut. One portion, (though we think fewer than formerly) are in the practice of taking it into the barn as soon as it is cut, and yellowing it with fire, and then curing it. The plan however most in use, and which we think most advisable, is to scaffold it to be killed and yellowed by the sun, from three to six or eight days, according to the weather. It should be crowded on the scaffold, and if the weather is warm it will be in a condition to house and fire in a few days. This condition is known by its emitting a certain mellow odor, and by its beginning to assume a yellow appearance, somewhat like a hickory leaf before it falls in autumn, or perhaps spotted more like the shell of a highland terrapin. It should be remarked that the practice of splitting the stalk when the tobacco is cut is universal in Virginia,

which makes it dry quicker and also makes it more convenient to hang over the stick. Not more than eight or ten plants should be put on each stick, and the respective sticks when placed in the barn should not be nearer than ten inches apart. Indeed it is desirable, if there is a plenty of house room, that the plants should not touch each other, as they are liable to be scalded by the quantity of hot sap which must pass off during the curing process. After the tobacco has been taken into the house and properly regulated as to distances, a fire should be built across the house under each tier. These fires should at first be moderate, and increased very gradually from day to day as the tobacco dries and cures, till it is thoroughly cured up. Some, however, stop the fires when the stems have been killed and turn dark, leaving them to dry up, or apply the fire again some days after. We have found it much easier to regulate the heat by building the fires between two large logs placed parallel. If the heat gets too high, they can be drawn farther asunder, or put nearer, if too low. A third log on the top is generally necessary as the curing operation is brought to a close. It requires the most careful, vigilant, and judicious hands on the farm to attend to the curing, nor can the most careful and detailed account of the operation be substituted for experience.

(Note M.)

It is best that tobacco should not be caught in rain after it is cut, neither is it desirable to cut it immediately after rain.

(Note N.)

In Virginia our tobacco barns are usually constructed of logs squared at the ends, and they are cellared 18 inches, or 2 feet, to secure the logs from the action of the fire. Some planters build their houses very close; but there is a great deal of good sense in the remarks of our writer on this subject. It is best to have them close for some feet near the ground to prevent the action of the wind on the fire.

(Note O.)

Ground leaves are not gathered with us before the plant is cut. There are always inferior leaves near the ground, which are permitted to remain and cure on the stalk. When the stripping is going on, they are taken off and tied to themselves and are called "*lugs*."

(Note P.)

Many of the writer's remarks are judicious and correct; but it is very apparent that the management after the crop is cured is not in the same style of our best Virginia planters. He speaks correctly when he says that the greatest skill of the planter is needed from this time till it is brought to market. Indeed we may say that almost every thing depends upon the subsequent treatment. We have seen very indifferent crops, by skillful management, command the finest prices; and on the contrary, the richest and best cured have been sacrificed for paltry sums. Hence the high wages which the judicious overseers have commanded in the tobacco region. The difference in price between two hogsheds well managed, and the same number indifferently managed, would pay his wages, as high as they may appear. We will proceed to state somewhat in detail the dif-

ferent operations by which it is prepared for market. No crop perhaps requires such unremitting attention, vigilance, and system. The crop is already cured and hanging in the house; but as our writer remarks, it should not be permitted to "come and go," as the planters say; that is, it should not be allowed to come in "order" every wet season, as it will change the color which was given it in curing. Small fires should be put under it in damp seasons to keep it dry. It should hang till after a few keen north-west winds in November have thoroughly seasoned and cured the stems, some of which would easily mould without it. It is now to be taken down, or "*struck*," as it is called, in tolerably supple order, as there is not much danger of its moulding during the winter's cold, (which is the time for stripping,) and as it should be shaken and whipped moderately to get off the dirt. It is now to be laid away, or bulked straight upon the sticks, elevated on logs or skids to keep it off the damp floor, and covered carefully with straw and sticks. Now the process of stripping begins. The best judges of tobacco are made what are called "*sorters*," whose business it is to take up plant by plant, and separate according to quality into four parcels—"lugs," "*short*," second, and first quality: There are strippers at each of those respective parcels, who strip and tie up the leaves in bundles containing from five to eight, according to the size of the leaf. Before it is tied, the bundle should be held up to see that the leaves are all of the same length. Small, nice leaves are to be kept by each stripper to tie with. He should never take a good large leaf for that purpose, which would be bad economy. The top of the bundle should be covered by the tying, so that the ruggedness of the leaves do not show, and the tie be continued down about two inches. The stripping being gone through, each quality should be bulked to itself. A floor is made of the tobacco sticks, raised from the ground. Two or three of the hands now place themselves in a row, one of them takes up two bundles and places the but-ends even, and straightens them. They are then passed through his hands by squeezing from the top to the bottom, and passed on to the next, who goes through the same operation, and then the next, and so on, till it is in the hands of the bulker, who is fixed on the floor above described, on his knees. He presses the bundles close side by side with the butts out, and pressed down with the knees, and is by that time supplied with more, which are disposed of in like manner, till he passes through the whole length of the floor. He now begins and reverses the packing, so as to have the tails lapped one-half or two-thirds, and the butts facing at opposite sides. Thus the process continues till the whole is disposed of, which is called "*windrows*." The whole is now covered with sticks and weighted with logs of wood or rocks, and straw thrown about to prevent too much exposure. When the butts are thus turned out, there is not much danger of its moulding, though it is best to examine it in warm and moist spells. It remains in this condition till some time in March, when it is hung up on small tobacco sticks to be dried out by the cold hard winds. It must not be permitted to "come and go" by the changes of the season; but after being once thoroughly dried, it must be again struck for "prizing" in some warm season, when it is just soft enough

to keep from breaking. It must now be bulked as in the former case, with this exception, that one bundle only is taken through the process at a time, and packed down as straight as possible for prizing, and well weighted. It is a matter of the greatest importance that the bulk should be so protected from the changes of the atmosphere that it will remain precisely in the order in which it was "*struck*," as it is called. With this object, it is the practice of some (and we ourselves adopted it, and think it most invaluable) to have tight boxes in which it is packed. They should hold about one hogshead of tobacco each, and are made about 10 feet long and 4 wide, with a lid to fit in close. The workmanship should be strong and with as few apertures as possible, and heavy weights should be placed upon the lids after the tobacco is bulked. When the planter is ready to prize, he will find the bundles to come out of the box almost as straight as candles, which very much facilitates the prizing operation. In putting the bundles in the hogshead, they should always be laid on the edge, if they are anywise flat—the longest bundles in the middle and the short ones around the edge, which fit in more neatly. There is very great art in prizing, and the same tobacco will command more or less by several dollars in the hundred, according as it is prized. There are different modes of placing the bundles in the hogshead, but this would be impossible to describe on paper, and could only be acquired by observation.

The few remarks which have been made in these notes, are merely an outline—a sketch of the process of the tobacco culture amongst the best planters in Virginia. We have not the leisure to go more into detail, and many things could only be acquired by observation. Tobacco is a crop of much labor, and the cultivator can only be paid for it by getting the best prices—and to do this, he must take great pains. We consider that no man is paid for his trouble if he does not get \$10 per hundred. This remark may be qualified, however, by saying that those who live near market would perhaps find it to their interest to adopt a more summary course, by taking it to market in a loose state as soon as it can be stripped out. In this way, although they may not obtain the highest prices, yet they get it off their hands—have the use of their money several months sooner—avoid a great deal of waste, and have more leisure to raise manure and improve their farms.

#### DISEASES OF HQGS.

From the Agriculturist.

As we rank the hog among the most useful and indispensable of our domestic animals, it is but right that we should investigate their diseases and endeavor to apply some remedies. The number lost in this neighborhood last fall was 4 to 500—this is a matter of some interest with a community that have to raise or buy as much pork as we do, for we consume more to the population than any other people—from the fact that the negro population consume nothing else. The most of our farmers attribute the death of their swine to the stock pea. Can any of your numerous readers tell if peas are injurious to hogs

under any circumstances? and if so, what is an antidote? We are in the habit of growing peas with our corn for the purpose of sustaining our young hogs through the fall and winter, and for the further purpose of enriching the soil. The pea is the most certain and prompt restorer of worn soils we have ever tried. If we have to abandon the pea for its bad effects on hogs, we shall be in a bad condition. The hogs that died here this fall had none of the common diseases of swine—they continued to decline—refused to eat, and died without any uncommon symptoms—none ever recovered that were noticed to decline. They were taken off the peas and fed liberally with corn smeared with tar and sulphur, and the disease was arrested. The season had been very wet and something may have grown out of that fact. The three common diseases of swine are, breaking down in the loins, staggers and thumps. I will give my experience on these diseases. I am inclined to think that the disease of the loins is of two grades or kinds; 1st, where the hog is without motion from the loin back. 2d, where they have motion in the hind legs but cannot rise. Whether the affection proceeds from the same cause, and one a mild and the other an aggravated case, I cannot tell; but it is true, that in cases where there is no motion in the hind legs they always die. But in the second case, most all may be raised, by plucking out the hair on the loins and making an incision near the spine, and rub it well with tar and feed on slops, with a good portion of red pepper—I have raised and fattened many. If I do not mistake the Kentucky Farmer, or Southern Cultivator, asserts that this disease of the spine is incurable. The staggers is a disease of the head I think—the tendency is to turn round and round till the hog falls on a particular side, and it is difficult to make them lay on the other side. Bleed by cutting the tail and ears—they will generally recover, but will never distinguish the direction of sound so well afterwards, if they have been badly afflicted.

*Thumps.*—I have never noticed this disease in hogs of much size. It generally attacks shoats that have been badly raised, and generally proves fatal. Cotton seed, straw and dust, I think, create this disease—though I had a shoat that was fat, had never seen cotton seed and had slept in the woods, where there was no dust, that died with this disease last fall. G. L. COCKRILL.

#### ESSAY ON CALCAREOUS EARTH, AND REMARKS ON QUICK-LIME AS AN INDIRECT MANURE.\*

*By William B. Smith, M. D.*

Delivered before the Cumberland Agricultural Society, Nov. 13th, 1840; and communicated for the Farmers' Register, by order of the society.

Many modern philosophers are inclined to the belief, that all the calcaeous earth on this globe is of animal origin. But such an opinion cannot

be supported, for this plain reason: that if lime is a primitive elementary substance, it must have existed before animals could have been furnished with it. Lime in all probability is coeval with this earth, and has undergone solution, precipitation and crystallization; and it has also entered largely into the structure and composition of the animal and vegetable kingdoms.

Chaptal says, "the formation of lime-stone appears to us to be for the most part, owing to the wearing down of shells. The identity of the constituent principles of shells and calcaeous stones, and the presence of these same shells, more or less altered, in the lime-stone mountains, authorize us to conclude that a great part at least of the calcaeous mass of our globe owes its origin to this cause only. "Again," he says, "it may easily be conceived that these shells, when carried along by currents of water, must strike together, and wear their respective surfaces; and that their pulverulent remains, after being long carried about and suspended by the waters, must at last subside, and form heaps or banks of shells, more or less altered according to circumstances."

Lime changes vegetable blues to green, and combines with all the acids; it also combines with sulphur, sulphuretted hydrogen and phosphorus, and is very abundant in the mineral kingdom, forming the basis of animal bones and shells.

The earthy part of animals is chiefly, if not altogether, calcaeous; in most cases it is united with phosphoric acid, but frequently with the carbonic.

The calcaeous spars, lime-stone, stalactites, marble, alabaster, chalk and marl, consist chiefly of lime. This earth is pretty generally diffused, more or less, over the whole surface of the globe; but we will direct our attention principally to quick or caustic lime, most commonly found in strata combined with the carbonic acid; and is obtained by exposing the carbonate of lime to a high degree of heat, which drives off the carbonic acid in a state of gas. In this condition it is brought to market, to be employed in medicine, the arts and husbandry.

To obtain lime in the greatest degree of purity, pounded chalk is boiled in pure water, and dissolved in acetic acid (vinegar) and precipitated with volatile alkali; this precipitate, when well washed, is pure lime, soluble in six hundred times its weight of water. It has a penetrating, burning, acrid taste, unites readily with water, falls into powder, increases in bulk, evolving at the same time heat and phosphoric light. Acids rea-

not concur with Dr. Smith in some of the views presented in his essay, in regard to the action of quick-lime, and compounds of lime in soils. We do not usually feel called upon thus to express dissent from the opinions of correspondents, and there is still the less need of doing so in regard to papers which are parts of the transactions of societies, and ordered as such to be published. Still, as the subject of calcaeous soils and manures has heretofore engaged so much of our attention, it seems proper to make, by this note, an exception to a general rule—and we trust that it will not be deemed either indecorous or disrespectful.—Ed. F. R.

\* Let our silence should be misconstrued into assent, it is proper for us to say generally, that we do



dily dissolve lime, and there are probably as many calcareous salts as there are known acids.

Lime contracts the living fibre, and therefore possesses astringent powers; it is also a powerful antacid and stands highly recommended in chronic diseases of the skin, cancer and ill-digested sores: it is used also in diseases depending on laxity and debility of the solids, as in diarrhoea, diabetes, scrofula and scurvy. This earth neutralizes noxious air. Calcareous countries are for the most part free from infectious diseases; while sandy and clayey soils of the same climate are subject to fevers. Where there is no calcareous earth, the inhabitants should wash their rooms annually with lime; strew it before their doors, lime the trunks of their fruit and ornamental trees, and it will have the double effect of preserving health and destroying insects.

Lime after having been deprived of fixed air unites with it again with great eagerness. This process goes on so rapidly, that quick-lime, by being exposed to the open air, will grow mild again by the absorption of carbonic acid.

"Lime powerfully attracts the carbonic acid, of which it was deprived by heat, and that acid is universally diffused through the atmosphere (though in a very small proportion, and is produced by every decomposing putrescent substance. Consequently caustic lime, on land, is continually absorbing and combining with this acid; and, with more or less rapidity, according to the manner of its application, is returning to its former state of mild calcareous earth. If spread as a top dressing on grass lands—or on ploughed land, and superficially mixed with the soil by harrowing—or used in composts with fermenting vegetable matter—the lime is probably completely carbonated before its causticity can act on the soil. In no case can lime, applied properly as manure, long remain caustic in the soil. Thus most applications of lime are simply applications of calcareous earth, but acting with greater power at first, in proportion to its quantity, because more finely divided, and more equally distributed." See "Calcareous Manures" chapter viii. page 33.

From the avidity with which these two bodies unite in ordinary circumstances, it has been imagined that quick-lime acted upon land, or manures, by hastening putrefaction; that is by disorganizing animal and vegetable manures, and depriving them of their fixed air. Lime, in the absence of carbonic acid, unites with various other acids of the soil, tempering their stimulant and corroding properties. This sometimes happens, but the carbonic acid of the atmosphere unites with lime as soon as it is given to the soil. In order then to derive the greatest benefit from this mineral as a manure, it should be immediately covered with the plough, to exclude atmospheric air; it will then more readily unite with the carbonic acid of the earth, and hasten the decomposition of animal and vegetable matter.

The wonderful effects produced on land by gypsum, or plaster of Paris, seem to astonish the farmers, and yet these effects are produced by the action of lime alone and not the combined action of sulphuric acid and lime which forms gypsum: unless the carbonate of lime and sulphate of lime undergo decomposition when given to the soil, they are inert, and can exert no influence on vegetable or animal matters.

These salts may undergo slow decomposition when applied in fine powder; but if we wish to renovate our lands speedily we must use quick-lime.

The plaster of Paris will be decomposed by the following salts, when given to our lands:

1st. By the nitrate of potash (saltpetre.)

2d. By the nitrate of soda.

3d. By the muriate of soda (table salt.)

4th. By the carbonate of potash (vegetable alkali.)

5th. By the carbonate of soda (mineral alkali.)

The sulphate of lime, is more apt to undergo decomposition from the various agents in the earth and atmosphere, than the carbonate of lime; for none of these salts, that is, the nitrate of soda, muriate of soda, carbonate of potash, or carbonate of soda, will readily decompose the carbonate of lime. When gypsum and the nitrate of potash are united, a double elective attraction takes place; the potash of the nitre attracts the sulphuric acid of the plaster of Paris and forms sulphate of potash, and the disengaged nitric acid unites with the lime and forms the nitrate of lime. When plaster of Paris is applied to soils, impregnated with muriate of soda, (table salt) a double elective attraction also takes place. The sulphuric acid unites with soda, and forms Glauber's salt, and the muriatic acid unites with lime and forms the muriate of lime. This double decomposition will not hasten the growth of plants, for the sulphate of soda and muriate of lime cannot decompose animal and vegetable manures. Gypsum then should not be given to lands on the seaboard, or to soils impregnated with muriate of soda, or table salt, because the lime is lost by its union with muriatic acid.

But why this chemical process? Let us drive off the sulphuric and carbonic acids by heat, and give the pure lime in its caustic state to our lands. It will then immediately commence action, by condensing the principles of the atmosphere, attract its moisture, and at the same time seize upon every blade of grass, every leaf and indeed all kinds of vegetable and animal matters and hasten their decomposition by robbing them of carbonic acid.

I find in the "Medical Repository," the following review, vol. i. p. 346. "Agricultural Inquiries on Plaster of Paris. Also, Facts and observations, on that substance as a manure, &c. By Richard Peters." With great pleasure we announce this small publication, which is intended, as the author modestly says, "to invite as well as to give information," and which is collected chiefly from the practice of farmers in Pennsylvania. The subject of manures appears, as yet, to be in need of much further elucidation than it has hitherto received; and on scarcely any article of the whole tribe of fertilizing substances is a rational theory more wanted than in the case of gypsum. Mr. Peters has proceeded in the proper way to come at a right understanding of this subject, by laboriously and patiently collecting, not only the facts which fell under his own eye, but those which occurred to the intelligent farmers of the country around him.

"The mode adopted to collect information was by a circular letter, containing about a dozen queries. To these queries answers have been returned by Messrs. West, Frazer, Price, Hand, Curwen, Sellers, Duffield, Wharton, Roberts,



Heckewelder, and by Mr. Peters himself. So that the materials collected are to be considered as the result of the agricultural experience of these respectable cultivators. They all agree in the vast utility of gypsum as a manure in most parts of Pennsylvania, where it has been tried. It seems to be agreed on, that after ten or eleven years' use, the gentlemen still entertain their good opinion of it: that it remarkably recovers exhausted and impoverished land; that one bushel and a half, or two bushels, will be sufficient, if yearly repeated, for clover; that it will answer well in a sandy loam, upon a limestone bottom; that though it is serviceable when strewed in powder, on growing plants, it succeeds best in repetition, after cultivating and dressing slightly with stable manure, or with ploughing in green manures. As to the supposed sterility occasioned by gypsum, Mr. Peters observes, that his own experience teaches him it does not exhaust more than other manures do, particularly dung, and that, to produce its full effect, it must have something to feed on, as some farmers express it; that is, as we suppose, to be valuable and active, gypsum must meet with something in the soil to decompose it; and where this is wanting, the plaster of Paris does no good. When strewed on the surface, it most remarkably benefits white and red clover, and most grasses; though it did not appear to do any good to winter grain. It is good in all leguminous plants, buck-wheat, flax, hemp, rape, and oily seeded plants; most products of the kitchen garden, and for fruit trees; as well as for oats and barley, when sprinkled at sowing time on the wetted seeds. Mr. Peters has sowed gypsum at all times of the year, and has found it answer well, if strewed over the land at any time from the beginning of February to the middle of April; and he directs it to be sowed in misty weather, to avoid the loss of having it blown away by the winds if sowed in a dry time. Some do not sow it until vegetation begins, though our author thinks it will have an effect if sowed at any season. As to the quantity of produce by the acre, Mr. Peters affirms he gets as much from gypsum as from any other manure; that the hay is better than that produced by dung; the cattle waste less of it; and, if the grass is used for pasture, the creatures are much more fond of the plastered than of the *dunged* produce. He is satisfied with a ton and a half the acre at a cutting; he mows twice, and has a third growth for grazing afterwards. Its durability is such that, though sometimes it will be exhausted in one year, yet the effect of one dressing, of three or four bushels to the acre, has been felt for five or six years, gradually decreasing in its powers, and seems to be capable of prolonging the efficacy of dung; and has been known to do good, when sowed repeatedly, and in small quantities, for a continuance of twenty years or more."

I regret that this valuable little work on gypsum cannot be obtained in Virginia; but from the "review," brought before the reader, Mr. Peters, is of the opinion, that "gypsum must meet with something in the soil to decompose it; and where this is wanting the plaster of Paris does no good." So says his reviewer; or in other words, the plaster of Paris, before it can benefit the soil, must undergo decomposition; and the lime being set at liberty immediately acts on vegetable and

animal manures; causing them to yield back their principles to the earth and atmosphere as food for plants. In this decomposition the lime of the plaster of Paris, unites with the carbonic acid of the earth and air, forming carbonate of lime, and the sulphuric acid unites with potash or soda forming vitriolated tartar, or Glauber's salt. These two alkalies, potash and soda, have the strongest affinity for sulphuric acid; and gypsum when given to the soil, will not be decomposed unless it contains potash and soda, or their combinations with carbonic, muriatic and nitric acids, which form the carbonate of potash and soda, the nitrate of potash and soda, and the muriate of soda. These five salts, as I have before stated, will decompose gypsum, as well as their bases.

Farmers are often disappointed in the use of gypsum, and it is owing to the circumstance that there is nothing in the soil to decompose it. We have reason to believe that this salt, when used as manure, lies dormant in the earth for many years. Dr. Meriwether informed me that in one instance ten years elapsed, after using gypsum, before the soil received any benefit from it. Gen. T. B. Randolph, used much plaster on his Green Creek farm 12 or 15 years ago and it has not, until within the last three or four years, fertilized the soil.

Both salts and alkalies decompose gypsum or sulphate of lime; but the carbonate of lime seldom meets with agents in the soil to reduce it to its principles; hence it is that farmers fail in the use of lime united with carbonic acid.

Many theories have been given to the world on the subject of lime as a fertilizing agent in farming; but I cannot believe lime acts as a manure, nor has it in my opinion any nutritive properties. By uniting with carbonic acid it sets free a number of gases and other principles in the earth and atmosphere, and they stand ready to be taken up by the inhaling vessels, and tender roots of plants. So that lime hastens the decomposition of vegetable and animal manures, and is nothing more than an exciting agent, disengaging nutritive elements; and they become food for plants to be elaborated into sap, mucilage, oil, &c. From what has been said, it would seem that lime acts indirectly as a manure, by performing the great work of disorganization, and may with propriety be considered a stimulant.

Quick-lime unites first with carbonic acid, if within its sphere of attraction, and this union continues until the carbonate of lime is completely formed; it then becomes inert, and the soil will require another dose of lime in order to carry on vegetable and animal decomposition. If the sub-soil of eastern Virginia was composed of the carbonate of lime, it could not exert any influence on its soil; because in that state it would be inactive, and must undergo decomposition and give up its lime before it can benefit the soil. In all calcareous countries the soil becomes exhausted by the continued action of carbonic acid, and cannot be reclaimed without the application of quick-lime. Hence we find in the richest limestone regions the farmers are busily employed in burning lime-stone as a manure for their lands. I should infer from this circumstance, that lime loses its effect, and is not a permanent manure.

Mr. Ruffin assures us, however, that it is permanent, and I beg leave here to quote his own language from his invaluable 'Essay on Calca-

reous Manures,' chap. xvii, p. 58-9. "Lord Kames mentions a fact of the continued beneficial effect of an application of calcareous manure which was known to be 120 years old. Every author who has treated of manures of this nature attests their long duration: but when they say that they will last 20 years, or even 120 years, it amounts to the admission that at some future time the effects of these manures will be lost. This I deny—and, from the nature and action of calcareous earth, claim for its effects a duration that will have no end." With all due deference and respect for an opinion coming from such high authority, I beg leave to differ. Lime is not lost when given to the soil, but we have reason to believe its general properties are changed by uniting with carbonic acid. Now there is a wide difference between the carbonate of lime and quick-lime, when used as manure—the former is a mild inactive neutral salt; the latter a caustic, disorganizing earth, that feeds plants by setting at liberty the components of the atmosphere, vegetable and animal matters, putrid sewers, dunghills and grave-yards, until the fell destroyer becomes satiated and neutralized with carbonic acid; and, being unable to pursue the work of destruction any longer, remains quiescent. I doubt whether the carbonate of lime, when given to the soil in extreme division, undergoes decomposition. For, according to Mr. Lavoisier's table of the combinations of carbonic acid with the salifiable bases in the order of affinity, lime stands first, with the exception of barytes, an earth seldom found in Virginia. Carbonic acid, then, having the strongest affinity for lime, will unite with it, and the longer it is exposed to atmospheric air the harder it becomes. Marine shells remain on the surface of the earth for ages, in a state of preservation, exposed to heat and cold, moisture and dryness, resisting at the same time the action of the acids. Lime used in building becomes so hard from atmospheric exposure and age, that it is with difficulty broken; and I suspect the lime mortar in the old church steeple in Jamestown has become by age as hard as lime-stone. Lime water exposed twenty-four hours to the action of air, forms a carbonated crust, and, if it remains any length of time, all the lime dissolved in the water will unite with carbonic acid, and form a neutral salt. May we not conclude, then, that quick-lime, when given to our lands as manure, ultimately becomes a salt by the laws of affinity? Am I right, then, or wrong, when I say our lands must be periodically limed? Lime alone must be used as manure, and not its combinations with the carbonic, sulphuric and other acids. Those who purchase lime with a view of improving the soil, should get it in tight casks, and plough it in as soon as possible; for a few days' exposure to the action of the air destroys its caustic properties in a great degree, and deprives it of the power of decomposing animal and vegetable manures.

Dr. Meriwether, a distinguished farmer, was the first, I believe, who used lime as a manure in Amelia; and he regularly limed his little farm of 250 acres once in four years, and was amply paid for the lime and labor.

In eastern Virginia, we have the sand, and the clay, and the labor, but we are without lime; how are we to get it? My answer to the question is, that we must buy, if it cost 75 cts. per

bushel, for without this useful mineral our lands can never be reclaimed. We may go on slowly to improve our farms, with vegetable and animal manures, rest and native grasses, but all our worn lands cannot be reclaimed without lime. Now the question is, shall we continue the present system of agriculture, or shall we lime our lands?

Two ounces of quick-lime will cover one yard square; and as there are 4,900 square yards in an acre of ground, two ounces to the square yard brought to us at 75 cts. per hundred pounds, 612½ lbs. will cost \$4.59 the acre. I am not prepared will amount to 612½ lbs.; and as lime can be to say this quantity of lime will reclaim our worn lands, but think it will increase our grain crops, and enable us to purchase again the same amount of lime, which will reclaim, if not enrich our worn lands; at the expense of a quarter of a pound of lime to the square yard, or 1225 lbs. to the acre, which will cost \$9.18, if lime can be furnished at 75 cts. per hundred pounds. Is it then to the interest of land holders in eastern Virginia, to improve their farms, by liming at from \$4.59, to \$9.18 per acre? It appears to be the only alternative, and the farmers of eastern Virginia, ought to give half a pound of lime, to the square yard, or 2450 lbs. to the acre, which amount to \$18.36, in preference to emigration. And why? Because their farms would be rich, crops abundant, and ample returns made for every dollar given to the soil.

The population of Cumberland is less in 1840 than it was in 1830, owing I suppose to the deterioration of our lands, and the only way we can stay emigration, and save eastern Virginia, is to lime the soil and plough it deep. But while I am inculcating this doctrine, I must be candid enough to say, that I have never limed my farm, and am hiring out laborers annually, because the farm has no lime to support them.

If rail-roads, contemplated some years ago, from Richmond to Farmville, Lynchburg and Danville, should ever be completed, it would then be within the opportunity of every landholder in this section of Virginia, to purchase lime at a very reduced price. But as this great work will not be carried out in many years, a rail-road from Planters' town, the head of navigation on the Appomattox, to some point on James River, above Warminster, a distance of 25 miles, would furnish a large portion of eastern Virginia with lime.

A section of the state then most remote from calcareous deposits, would be supplied with lime at 20 or 25 cents per bushel. Such a road would be valuable not only on account of lime, but various other minerals would be transported across the country, and cut off the long route down the James River and up her tributary streams.

But it may be said, that there are many landholders who could not incur the expense of lime at any price; this is true, unless they would sell a part of their worn lands, to improve the balance. If they are not disposed to make such a sacrifice, the only alternative will be, to improve a part of their worn farms, with manures collected from the stables, farm yards, cowpens, wood yards, leaves from the forest, ashes and so on. That part of the farm, which cannot be manured, should be inclosed, and every fall turn in the coat of vegeta-

tion with the plough. Such a system of husbandry will, in time, reclaim all our worn lands. The cheapest plan, however, will be to use lime, if we are under the necessity of selling property to pay for it. I beg leave here to give a word of truth for farmers, from the 'Raleigh Register.' In one of the old Roman writers there is a story told of one Paridus, "who had two daughters and a vineyard. When the oldest was married, he gave her a third part of the vineyard; notwithstanding which, he obtained from two-thirds the same crop as from the whole. When the other was married, he portioned her with half of what remained, and still the produce of his farm was undiminished." This story is an excellent moral, and should be improved. It illustrates the advantage of cultivating a small quantity of land well, rather than a greater quantity badly. It is a fact which strikes the most superficial observer, that farmers generally cultivate too much land. The evils of doing so are obvious: great expense of labor, and imperfect cultivation, by which land is impoverished, and comparatively small profits realized. It is a common idea among farmers, that the best investment of property, because the safest, is in land. When, therefore, they have accumulated a sum of money, they will, if possible, enlarge their farms. But, in most instances, it would be as much for their interest to bury their surplus money as to multiply their acres beyond their means of thorough cultivation. Nothing is more true than the remark of a celebrated writer, that "farmers are yet to learn the immense productive power of a perfectly cultivated acre." Lime, when applied to sandy soils, without vegetable matter, will have nothing to act upon but sand, which forms mortar, such as we use in building.

Lime given to clay soils, without manure, forms marl, and in either case there is no improvement of the soil. Lime given to poor soils, having a thin coat of vegetation, exerts but a feeble influence, because there will not be nutritious gases enough after vegetable decomposition to produce luxuriant vegetation. Thin lands, must be manured as well as limed before they can be reclaimed. Lands of this character may, in time, become rich by liming without manure; if we are careful not to give more lime than such lands can bear; a small quantity on poor soils will be sufficient to decompose its vegetable matter. But if manures be used with lime on poor soils, they are speedily reclaimed.\*

Worn lands in eastern Virginia, such as we cultivate in grain, yielding three bushels to the acre, will be wonderfully improved by the application of lime. Two barrels, or 600 pounds of lime on such lands, will more than double the crop the first year. Rich lands require no lime, it is our worn and exhausted fields we wish reclaimed; and in order to do this lime must be used as an exciting agent, and vegetation of all kinds will be pushed forward; the native grasses will in a short time become more luxuriant, and ultimately bring back worn lands to their native fertility.

Our lands should be limed, as soon as the coat

of vegetation is killed by the frost; or as early in the fall as convenient: immediately after liming the soil, turn it over with the plough, and the vegetable matter in the spring will have undergone partial decomposition, and be in a proper state to yield its principles to the tender roots of plants, as soon as the warmth of spring pushes them forward. Where vegetable and animal manures are very fine and well rotted, lime may be used with advantage in the spring; but coarse unrotted vegetable matters require lime in the fall, in order to carry on the work of disorganization through the winter months; and the various nutritive gases will be evolved for the spring crops. Decomposition will then go on through the spring and summer months and give the growing plants a due portion of aliment: for their evolution and growth depends on the decomposition of vegetable and animal manures. Some farmers lime in the hill, or roll small grain in lime before seeding; and it is astonishing to see with what rapidity vegetation is pushed forward for a few weeks. But as soon as the roots extend beyond the hill in a hungry state, it is truly mortifying to see how rapidly the plant declines; hence the necessity of spreading lime or manures over the surface of the earth, that the young roots may be continually supplied with food.

Observation and experience both teach us that worn lands may be made rich by liming and ploughing. Lands we do not intend for immediate use, should be inclosed, limed and ploughed, and the succeeding crops of vegetation, being more luxuriant, will increase their fertility: but if we wish to enrich the soil for immediate use, I would suggest the following plan of treatment. Give to an acre of land, yielding five bushels of wheat, two barrels, or 600 lbs. quick-lime in the fall, and turn it in with the plough; in the spring, seed it in oats or buck-wheat and fallow the crop at harvest. The second crop, will be ready for the plough in October, to be fallowed for wheat and clover. Under favorable circumstances the crop of wheat, the following year, will yield 12 bushels, and the land will be made rich when the clover crop is turned in eighteen months after taking the crop of wheat; or in three years after the application of lime.

#### Expense per acre.

612½ lbs. lime, 75 cents per cwt.	-	\$4 50
1 bushel oats	-	40
1 gallon clover seed	-	1 00
		<hr/>
		\$5 99

#### Credit.

By 7 bushels wheat, from increased fertility of soil - - - - - \$7 00  
So that the first crop of wheat, overpays the expense of lime and grain given to the land;—this is not all, the soil is enriched and will produce from the clover fallow 15 or 20 bushels. This plan of treatment should follow hoe crops, with a little variation. If a hoe crop be taken from a field in 1840, the land should be seeded in wheat and clover in the fall, and in the spring of 1841, give one barrel of caustic lime per acre, to the young clover; the wheat crop will be removed in the summer, and in the spring of 1842, lime the clover again with the same quantity, and fallow it in the fall.

Lands treated in this way will bear a hoe crop

\* Some farmers lime heavily; but six bushels on thin land will answer a better purpose than six hundred; unless there was in the soil, vegetable matter enough to neutralize it.

once in 3 or 4 years. The old system of cultivation with the hoe is improper; and I have no hesitation in saying that the hoe crops of eastern Virginia have exhausted our best lands. Where is the fine soil of eastern Virginia now? Much of it has been carried down hills, branches, creeks and rivers by the hoe crops, leaving nothing behind but galls, gullies, and the sub-soil. It is time they were given up except in a limited way; and let us make more small grain and grass in order to secure the soil we have remaining. Such a system of agriculture, assisted by lime, deep ploughing, and hill-side ditches, will renovate the worn lands of eastern Virginia, in four years. Then let us go to work in good faith, and use lime alone on our lands, free from the carbonic and sulphuric acids, and it will perform the work of dissolution in the earth, until the great destroyer becomes neutralized.

#### ON THE MANAGEMENT OF BEES.

By Thomas Ward Jeston, Esq., Henley-on-Thames.

From the Journal of the Royal Agricultural Society.

I have found by experience my plan for the management of bees, and mode of taking their superfluous honey, without destroying the parent hive, fully to succeed: in a bee-country it will afford the cottager a very ample return for his trouble, and not require so much watching as the old plan—for the older the hive is, the less chance will there be of swarming, but a greater chance of a large deposit of honey. I have kept bees more than twenty years; have tried Huish's, Nutt's, and various other plans, but the one suggested by this industrious insect itself I have found to be the most simple, cheap, and successful, and will not cost the cottager more than sixpence to adopt, in addition to his old hives.

Some years ago I placed an empty butter-tub under the board on which the hive rested; the sun cracked the board, and the bees enlarging the opening, took possession of the tub, and, after filling their own hive, deposited 26 lbs. of honey and comb in the tub below. This I took possession of for my own use, leaving their hive full of honey for their winter's consumption. By improving on this simple plan, I have carried off the prizes for honey at the Henley Horticultural Society for the last four years. A board, half an inch in thickness, 18 inches in width, and perforated with two holes, each an inch in diameter, is placed between the hive and the butter-tub. The tub should be placed under the hive as early as March; the bees having a great dislike to any disturbance of their arrangement. I last year took upwards of 40 lbs. of honey in this way, although the season was so bad, and an ample supply of food was left for the bees to subsist on during the winter. This plan will prove a good substitute for the "rear" used to enlarge the common hive; with this advantage, that a supply of honey can be obtained from the strong swarms as well as the old hives.

I have never found occasion to feed the bees from which honey had been taken in the mode described; but previously to the adoption, I was

in the habit of feeding them with coarse sugar boiled in beer, and a little old wax-comb, to the consistence of a syrup. As an experiment I once fed some bees with treacle, made from grating 112 lbs. of beet-root, pressing from it one gallon of juice, and boiling this with one tea-spoonful of sulphuric acid (commonly called oil of vitriol) and three tea-spoonfuls of common chalk, or whiting in powder, which will clarify it and throw off all impurities, leaving, on evaporation, a clear syrup fit for feeding bees.

There is little or no gorse or heath near Henley, and the character of the country is arable. The market-price of virgin honey (such as is obtained on my plan) is in the town from 1s. 6d. to 1s. 8d. per pound, and the wax from 1s. 6d. to 2s.

The following are the weights of seven hives, taken in April 1838, from which honey had been taken in the previous autumn, and yet the season of 1838 proved so bad that I obtained no honey that autumn, and two of the hives perished in the following winter:

Hive No. 1.	-	-	-	28 lbs.
" 2.	-	-	-	28 "
" 3.	-	-	-	25 "
" 4.	-	-	-	25 "
" 5.	-	-	-	24 "
" 6.	-	-	-	23 "
" 7.	-	-	-	22 "

This season my five old hives, and Nutt's hives also are in full vigor and operation.

Henley-on-Thames, Oxfordshire, May, 1840.

#### ON PREPARING NIGHT-SOIL.

From the (London) Farmer's Magazine.

Sir—I observed a few days ago in one of your late periodicals, an inquiry, by a correspondent, for the best method of preparing night-soil for manure. He said "he had mixed it with lime, and a very strong smell of ammonia was evolved, whereby he feared the efficacy of the manure might be impaired. These conclusions are perfectly correct; its efficacy as organic manure would be destroyed by the use of lime.

When an organic body containing nitrogen undergoes putrefaction, and moisture present, the nitrogen unites with the hydrogen of the water and forms ammonia; the oxygen, the other element of water, unites with the carbon of the putrifying body, and forms carbonic acid; both these transformations, in their nascent state, combine and form carbonate of ammonia, a volatile salt, which is always evaporating with water, as long as the decomposition continues. Such *invariably* takes place in nitrogenous bodies.

When lime is added to a body holding carbonate of ammonia in solution, as in night-soil, the ammoniacal salt is decomposed; the lime robs it of its carbonic acid, and caustic ammonia, a still more volatile compound, flies off in gas: thus we have got rid of all the nitrogen the organic compound contained.

Organic manure, without nitrogen, is of very little value. It pervades every part of the vegetable structure, and no plant will attain maturity, even in the richest mould, without its presence. The relative value of manure may be known by

the relative quantity of nitrogen it contains. There does not appear to be any manure so rich in nitrogen as human excrement (except bone manure, which contains upwards of 30 per cent. of gelatine in its interstices); so much so, that according to the analyses of Macaire and Marcet 100 parts of human urine are equal to 1300 parts of fresh dung of the horse, 600 parts of the cow, and 450 parts of the urine of the horse. Hence it is evident that it would be of much importance if none of the human excrements were lost, especially when we consider that with every pound of urine a pound of wheat might be produced. Now I would suggest to your correspondent the best and most economical method I know of preserving unimpaired the most valuable element in night-soil, which is as follows: To every 100 lbs. of night soil add 7 lbs. of sulphate of lime (gypsum) in powder, a double decomposition will ensue, and the result will be, instead of sulphate of lime and carbonate of ammonia, carbonate of lime and sulphate of ammonia; the latter a soluble salt which cannot be volatilized. It might now be mixed with other compost, or dried any way thought proper, and applied to the roots of the vegetable, to be again transformed into bread, butter, cheese, &c.

Chloride of calcium, sulphuric or muriatic acid, substances of low price, would completely neutralize the urine, converting its ammonia into salts which possess no volatility.

I would also suggest that if the floors of stables be strewed from time to time with a little sulphate of lime, they will lose all their offensive smell, and none of the ammonia which forms can be lost, but retained in a condition serviceable as manure. In close stables the horses' health would be better preserved, and they would not be so liable to get blind as now. 1½ lbs. of sulphate of lime will fix as much ammonia as is produced by 100 lbs. of horse's urine.

I am, sir, your obedient servant,  
Wanebridge, Nov. 14. GREGORY BRABYN.

#### ON THE WHITE OR BELGIAN CARROT.

By John C. Morton, Esq.

From the Journal of the Royal Agricultural Society.

Chester Hill, Nov. 18, 1840.

Sir:—I am desired by my father to send you the particulars of the crop of white or Belgian carrots on Lord Ducie's farm at Whitfield. The extent of the piece is 1 acre 36 perches, from which 64 cartloads of roots were taken. The average weight of a cartload was found to be 10 cwt. This gives 32 tons as the total weight of the crop, which is at the rate of 26 tons 3 cwt. per acre. The soil is a deep, sandy loam, belonging to the new red sandstone formation.

This is a heavier crop than any other on the farm. The seed was sown in the second week in April, on land which had been ploughed ten inches deep. It was sown on the flat, in rows eighteen inches apart, by the common Suffolk drill. The seed had been mingled with damp sand for several days previous, as well to sprout it partially as to render it capable of being drilled, as carrot seed clings so much together. They are singled out when a fortnight old at intervals

of six inches in the row, and two horse-hoings, with a hand-hoeing whenever the weeds made their appearance, was all the cultivation they received.

The result is a crop not only much more valuable per ton than any other green crop we have, but also heavier per acre, and raised at an expense less by at least one half than that attending the cultivation of turnip.

The crop on the land the year before was Swedes, which were carried off the land and sold. No dung of any kind was put to the carrots.

I am, sir, your most obedient servant,  
JOHN C. MORTON.

Ph. Pusey, Esq., M. P.

Note by Mr. Pusey.

This carrot, though it has been long grown as a field-root in Flanders, has been but very lately introduced into England: it is, however, much liked by those who have tried it in my own neighborhood. A farmer, Mr. W. B. Harris, who has grown it for two years on a good free loam, gives me the following account of it:—"On taking up my carrots and weighing them, I find they fall short of the quantity I grew last year. Instead of the white carrots weighing nearly 32 tons per acre, they will only weigh 20 tons this year; and instead of the red ones weighing about 16 tons, they only weigh twelve tons this year. I have generally found the difference between the red and white carrots to be as follows (in all cases where I have weighed them, and in all cases of inquiry):—The white generally exceed the red ones in weight from 8 to 9 tons per acre, when you take the average of the field as I have done now. I attribute the failure in my crop this year to two or three things. In the first place the land was not subsoiled; in the second, they were planted late, and the weather too dry; and in the third place, they were hoed too thin—they were hoed the last time with a bean-hoe." Even the diminished crop of Mr. Harris, however, is very considerable, as it is equal in weight to an excellent crop of Swedes, and is twice as valuable. On some lighter land 16 tons of the white carrot were grown last year, where the red field-carrot gave a very poor crop. I ought to add that I have not succeeded in raising more than 8 or 9 tons myself; but this new root has in its favour the high practical authority of the Yomford Farming Club, who "recommend strongly the cultivation of the long white carrot, as it produces a heavy crop of good quality, and adapted to strong as well as mixed soil lands, will keep well, and is excellent food for cart horses." It has been stated to me that there are two varieties, and that the best of the two is that which makes a large portion of its root above ground. Sir C. Burrell has grown it in Sussex, and has found it very productive. Colonel Le Couteur informs me "that in Jersey the prize crop of parsnips this year afforded 318 lbs. to the perch, or 23 tons to the acre; while the white carrot, a prize crop also, which he had cultivated experimentally, gave him 524 lbs. to the perch, or nearly 38 tons to the acre—an enormous crop," he adds, "which, if equally valuable for butter as the parsnip, will of course supersede it, as his parsnip crop in the same field, cultivated alike, only produced 16½ tons, which, nevertheless, was a very fair crop."

## BOUNTY FOR SILK.

The legislature of New York have passed an act allowing a bounty of 15 cents per pound for all cocoons produced in the state, and 50 cents per pound for the reeled silk. The act is to continue in operation until June 1, 1846.

## WHITE CARROT.

From the Sussex Express.

We beg to draw the particular attention of our readers to an excellent letter from Sir C. M. Burrell, Bart., on the subject of growing the white carrot, the value of which we can fully confirm, having this year (although the season has been very unfavorable) obtained highly satisfactory results respecting it. We were induced to experimentalize on this root at the recommendation of the Hon. Baronet, given last year. Next year we shall offer a premium for samples of white carrots.

*Knepp Castle, Nov. 3.*

Sir,—Perceiving, on perusal of your last *Express*, your notice respecting the premiums offered for specimens of turnips and mangel-wurzel, with accompanying statements of their culture, and appreciating the probable beneficial results of such an exhibition at Lewes, I trouble you with the following practical statement in support of my last year's published opinion on the preference of the culture of the white cattle carrot over that of the parsnip for agricultural purposes, and which was made in consequence of a letter from a correspondent in the *Lewes Advertiser*, advocating the growth of the parsnip, in which 500 bushels per acre was stated as the produce. Conceiving that from my then crop of white carrots, grown on a very indifferent field, the yield of which was 100 bushels per acre, without the green tops, that their culture would be more advantageous on stiff soils than that of the parsnip with a return of about a moiety of the produce only, I laid a comparative statement of my crop before the public, that agriculturists of intelligence and spirit might try the results by sowing both sorts on similar quality of land. But satisfied as I am myself of the preference of the white cattle carrot on my farm over all roots fit for cattle, I again sowed four acres broadcast on land of better quality this year, and so far as experience shows in the raising and housing of about half my crop, there will be, as near as we can determine, 1,300 bushels per acre, after separation from the green tops; and considering the depth whence their nourishment is obtained (in one instance no less than 3 feet 6½ inches, and in several others nearly as deep,) I do not view it as a very scourging crop, especially considering the vast increase of nutritious winter fodder, with consequent economy of hay, for both fattening and lean stock, and especially milk cows, their cream and butter being as good and free from any ill-flavor as when feeding on the pastures; and likewise looking to the great increase of farm-yard manure resulting from its consumption, to which may be justly added the clean, friable, and finely pulverized

state in which the ground is left after the removal of the crop, particularly well adapted for ridging up during winter and sowing with barley and seeds in the ensuing spring. I do not hesitate to bring the results of my experience to your attention and consideration; how far it may be desirable hereafter to introduce the white cattle carrot among those encouragements you offer in the shape of premiums for turnips and mangel-wurzel. For the obtaining of the seed I recommend both Messrs. Wrench and Sons, of King William-street, seed merchants, and Mr. Gibbs, of Half Moon-street, from either of whom good seed may be depended upon. My first inducement to try it was the representation of Mr. Eaton, M. P., whose father, I understood, obtained the seed from Holland; with a result on sowing it, on indifferent land in Cambridgeshire, of 1000 bushels per acre, with which my crop in 1839 tallied very accurately, I led myself to believe (but from the dryness which prevailed after sowing my seed last spring, and the consequence of a fresh growth on rain falling after hoeing in summer) that the carrots would have been of more equal size, and the amount of the produce possibly greater in weight and value. For the cultivation of the white carrot, free-working deep soils, well and deeply drained and *subsoiled*, are to be preferred; and the better heart the ground is in, and the cleaner the tilth, the greater will of course be the chance of a remunerative and beneficial crop. Mine were sown broadcast, 6 lbs. to the acre, costing last spring 1s. per lb.; but whether being sown in drills at proper distances, and ridged up, would improve the crop, I leave to the discriminate judgment of practical and more scientific farmers. I shall only add, that those who at my recommendation have sown the white cattle carrot express their satisfaction at their adoption; and my neighbor, the Rev. William Woodward, of West Grinstead, having sown them on a small breadth of land, has had cause to be satisfied with the result equally with myself. You are welcome to make what use of my observations you think proper, accepting my excuse for sending them hastily, and, I fear, rather incoherently written, my time being too much occupied to make a fair copy. I am, sir, your humble servant,

CHARLES MERRICK BURRELL.

## ON COAL-ASHES.

From the Farmer's Magazine.

Coal-ashes have long been known as a valuable article in improving all stiff tenacious soils, in opening the texture, and in correcting the tenacity; and in a pulverized state they form an excellent top-dressing for young grasses. They are very seldom found unmixd with other substances from the dwelling-house—a calx or cinder mostly accompanies, and except near large towns they form an inconsiderable article as a manure. Lime and magnesia are found in coal-ashes; but they are chiefly composed of silicious and aluminous earths, and vary much in their nature and proportions.

They contain much carbonic acid gas, carbon and hydrogen, with some iron; but our knowledge of them is very imperfect. The principal use is

in top-dressing clovers in March and April, at the rate of 50 to 200 bushels per acre, and usually applied in moist weather, when the effects are very great and certain. The calcareous matter they contain imparts the warming and sweetening quality that is found attached to all residual substances from combustion; and accordingly the use of coal-ashes, and of all alkaline and saline matters, is always recommended on all soils that produce sorrels, rushes, and mosses, in order to banish those plants, by depriving the land of the peculiar properties that are necessary for their production. But it may be observed, that such plants cannot exist where farming prevails, and that the action of manures should be restricted by every possible means to the promotion of those plants which the cultivator uses as a crop. In inland situations, where the supply of ashes is limited, an excellent use may be adopted by throwing them into the night-soil reservoirs, where they will absorb the liquid parts, and ultimately form a solid mass, thoroughly impregnated with the urine; and in the neighborhood of towns, where they can be got in quantity, and where the pulverization of the ashes is sufficiently fine, they may be very beneficially used as a top-dressing; or probably equally, if not more beneficially, by being mixed in a compost with good earths, and applied in the spring on grain lands, and harrowed in with the seed. Coal-dust, or the pulverized particles of coal produced during the different operations at the pits, has been found useful in some cases on stiff lands; but, it is evident, that the action in that case would arise wholly from mixing with the soil, and opening the texture as an earthy ingredient; for the substance applied contains none of the elements of vegetation, to be supplied directly by itself, or the power of producing thereby any stimulating and reciprocal action. Ashes, in a fine or riddled state, are useful for mixing with bones, at the rate of 1 to 20, in order to produce heat before sowing; though practice is far from confirming that process as being essentially necessary, which may arise from different temperatures of soil, and air during the applications.

J. D.

## MELILOT.

To the Editor of the Farmers' Register.

Dear Sir:—In your January number, some contributor, who signs no name, either real or fictitious, nor mentions the county in which he lives, has made a eulogium upon melilot, which seems to require some notice, lest it should betray young farmers into an experiment which they will repent as surely as they venture to make it. The writer just mentioned states, that about old settlements, "rendered calcareous by ashes, melilot grows with amazing luxuriance;" but that "he could easily turn it under, when necessary, by his large Clute and Reagle ploughs." He says, moreover, that "it affords fine grazing for sheep and cows during winter;" and that "it will not grow in other than calcareous lands." He concludes with hoping "that you will hear from it again;" and I shall now endeavor to

fulfil his hope, (if you will permit me,) by a few statements somewhat different from his.

Melilot is an old acquaintance of some forty or fifty years' standing, and many a fruitless effort have I made to extirpate it from every foot of land with which I have had any thing to do; but it has bid me defiance. It will certainly grow with "amazing luxuriance," about "old settlements,"—even to the height often of six or eight feet. But I must be permitted to doubt the possibility of any such growth being easily turned under, by any plough ever yet constructed. It is true that I never saw, nor heard of a Clute and Reagle plough, and therefore will not take upon me to say what one of them *could* or *could not* do. But I have seen and used all the most celebrated ploughs ever introduced into middle Virginia, and can affirm, without fear of contradiction, that even the best of them could not possibly perform such a feat as to turn under melilot growing as thick and as tall as it generally does at maturity—about old settlements. Nay, it will grow elsewhere with equal luxuriance; for I know that a part of the celebrated farm in Gloucester county, called Todebury, formerly the property of the late Philip Tabb, esq., was so infested with it, that none of his ploughs, although uncommonly good, could plough the land at all, until the melilot was burnt off. I must conclude, therefore, that when your correspondent speaks of easily turning it under with his Clute and Reagle plough, he means that he can do it before this plant reaches half its ordinary growth in good land.

His next assertion is, that "it affords fine grazing for sheep and cows during winter." Now, if it remains green during that season in his climate, I can only say, that in *ours*, which is about 38°, it continues as dead as a door nail for the whole of that period, and until late in the spring. I can moreover assert, that if his sheep and cows are fond of it in any season, *ours*, so far as I know and believe, will not touch it at any time. It has a strong, and very offensive smell, such as I should suppose would stink in the nostrils of quadrupeds quite as much as it does in our own. "*De gustibus nil disputandum*"—there is no disputing about tastes in men; and therefore it seems equally reasonable that there should be none in brute beasts; consequently have not a word to object to the fancies of his stock *quoad* melilot. Much and long may they chew the cud upon such a dainty, if their owner imagines that they enjoy it. He farther says, that "it will not grow in other than calcareous lands." But if you are right—as I believe you are—we have precious little, if any such in Virginia, unless they have been made so, by the application of marl, lime, or ashes; yet I have seen melilot growing in almost every part of the state which I ever visited.

As to the fertilizing properties ascribed to it by your correspondent, I believe that it possesses some, if ploughed into the lands. But many other plants possess as much, if turned in of the same weight, with this difference in their favor, that they will not interfere with any subsequent crop of small grain, as melilot inevitably does. It certainly has more vegetable matter after it reaches maturity, than any of our high land plants, for it grows taller, and equally thick. But in that state no plough ever yet formed can

bury it; the growth must be burnt off before the land can be worked by any implement. And then, with such an indestructible occupant, (for it is perennial, with tap roots—like the trumpet flower, which penetrate the earth to the depth of at least three or four feet—) our fields become unfit for the culture of small grain, and are thereby deteriorated much more than benefited, by sowing them with melilot as a fertilizer. That it may be so I will not deny; but in all the situations wherein I have seen it growing, it seemed to me to be rather the *effect*, than the *cause* of fertility. And this, by the way, is a mistake which careless observers of the vegetable world have not unfrequently made. I once heard a ludicrous instance of it related of an old farmer who was remarkable for great eccentricity of thought and action. Thus ran the story. The old man had taken a crotchet into his head, about planting corn time, that poke-root would enrich land; because he had always seen it grow in rich soils. Forthwith therefore he ordered a quantity of it to be dug up—sufficient to drop a piece or two in each corn hill, and chuckled at it as a grand discovery. But he was greatly disturbed the next day, by receiving notice that his overseer was about to quit him. As he was an excellent manager, who had long lived with the old fellow, on perfectly friendly terms, he anxiously sought an explanation of this most unexpected notification. This he obtained, after long importunity, by the overseer's addressing him thus:—"Why sir, if I must tell you why I gave you notice, it was because I don't understand anything at all of your philosophy way of planting corn; and am sure, if I try it, that I shall lose my character, upon which I and my family depend for a living." The conference, ('twas said,) ended in the old man's giving up his "philosophy way" of enriching corn-hills by poke-root, and retaining his good overseer. I remain, dear sir, your old friend,

COMMENTATOR.

If there was any thing to condemn in the form, or for the insertion of the piece commented on above, the fault was ours, and not the writer's, who had not intended, and had given no authority for its being so used. It was part of a long private letter, from a gentleman of the highest character, and whose ability for, and habits of careful observation are not often surpassed, and whose former contributions to this journal have been among the most acceptable and valuable. Deeming it the best mode of obtaining the information he desired, on a subject which his words showed manifestly he had not much or long experience of, we took the liberty of publishing the passage from his letter; but, of course, did not presume to use his name, or otherwise indicate the author. Writing under these circumstances, even if the remarks had been obnoxious to the charge of still greater incorrectness, they would have deserved no censure—or if any, it should be cast on the publisher without authority, and not on the writer. The writer is as well able to defend himself

as any person; but as it is probable that he may not choose to thus pursue a matter which he did not designedly commence, we shall add something in defence or explanation of his statements.

We admit, and defer to readily, (and so we are sure would our prior correspondent,) the much more full experience of our friend "Commentator," in regard to melilot; and we are glad that his testimony has been thus drawn forth to prevent other mistakes as to the value of this plant. But still, to one who had seen much less of the plant than "Commentator," on less favorable soils, and therefore of smaller size, though still of remarkable luxuriance, for the soil—surely it was an error of opinion which was very nearly allied to accurate observation and correct deduction, to suppose that melilot would be a valuable plant for enriching land by its growth. We had formerly taken up (upon similar grounds) the like opinion; and we tried, in vain, (and luckily, as it now appears,) to spread the growth by scattering the seeds. A very intelligent friend and neighbor of ours, on whose farm grew a single patch of melilot, was so favorably impressed with its supposed value as an improving green crop, that he saved the seed and sowed it extensively; but, though on marled land, we believe that his efforts, like our more limited attempts, were totally fruitless.

Next, as to the melilot furnishing green food in winter, we have no question (upon Commentator's closer observation and better information,) that our first correspondent was mistaken;—but that it was owing to his relying, for that fact, on statements of others, and not having himself had full opportunity for observation. Except in regard to the mistake, on this minor point, he was strictly accurate in all his premises, and also in his deductions from all the facts before him. Still, by showing that the premises are more usually varied, and much for the worse, "Commentator" has clearly shown that the views first presented were mistaken.—ED. F. R.

#### COMPRESSED PEAT FUEL.

From the Perth Courier.

We have referred to a machine, some time ago invented by Lord Willoughby d'Eresby, and latterly perfected by skilful artisans under his direction, for compressing peats. One of his lordship's tenants, on the Drummond Castle estate, Mr. Clark, at Coryour, has of late been manufacturing the new fuel, chiefly for the jewellers and steel forgers in England; and this week a very large supply arrived at the new quay for



shipment to London. It is made up in the shape and size of soap bars, and so powerful is the compression employed that the original peat is hardly to be recognized in the black and metallic looking mass which the machine perfects. The properties of this fuel are found to be highly advantageous in the branches of manufactures above referred to, and its great economy is evidenced in the reduced price at which cutlery wrought with it is offered for sale. Sheffield razors, bearing the mark "peat compressed," have been on sale this year throughout the country, we have been informed, as low as 27s. per dozen. We look for a rapid extension of the use of this valuable invention of Lord Willoughby's, not only as offering the means of procuring for the inhabitants an abundant supply of a more cleanly and useful fuel than they have hitherto, from their inland situation, been able to obtain, but opening up to them a profitable branch of industry, for which the field is nearly as inexhaustible as that of the material.

#### CRUELTY TO HORSES. THE HAWS AND THE LAMPAS.

March 17th, 1841.

The present communication will consist of a word or two in behalf of the horse. Although he is acknowledged on all hands to be far the most useful of all the brute creation ever yet domesticated by man, I believe it may truly be said, that none are so cruelly and barbarously treated as the horse. Hardships and bodily sufferings excruciating in degree, and utterly useless to ourselves, are often most wantonly inflicted on him. He is frequently deprived of his ears and tail, by an excessively painful operation, merely to gratify a most preposterous, absurd, and inhuman fashion; he is often killed or crippled in our selfish and sinful struggles to win each other's money by racing, or in working him far beyond his powers to increase our wealth, or in the idle, ridiculous amusement of moving our precious persons from place to place with more rapidity than any of our senseless rivals in the same sport have ever done before. But still worse, still more brutal than all, after the faithful animal has entirely worn out and exhausted, in his ungrateful master's service, all the energies which nature had given him, and is no longer capable of any kind of work whatever, he is turned adrift, to die of old age and starvation! Would not those who act thus brutally to horses, treat their fellow men in the same way, if public sentiment had not stamped such conduct towards human beings with the indelible stigma of utter detestation and abhorrence?

The foregoing are all cases of undeniable, enormous barbarity, which, however shocking to our humanity, are not to be cured either by persuasion or reproof; for the perpetrators, generally, are persons far beyond the reach of any moral appliances whatever. But there are some instances wherein the horse is cruelly treated, not from design, nor mere disregard to his wants and well-being, but from sheer ignorance. The most remarkable of these instances is, the quack-remedy for two diseases to which the horse is liable,

These are the "*haws*," vulgarly but improperly called "*hooks*," (for there is no such word in any scientific book of farriery,) and the "*lampas*." The first takes its name from the "*haw*," of which the following account is given in that excellent treatise on the horse, published by the English Society for the Diffusion of Useful Knowledge.

"We have, (says the author,) a provision for supplying the eye with the requisite moisture, and for washing from off the transparent part of it insects or dust which may annoy the animal. What becomes of these impurities when thus washed off? Are they carried by the tears to the corner of the eye, and so pass down this duct, and irritate and obstruct it; or do they accumulate at the inner angle of the eye? There is a beautiful contrivance for disposing of them as fast as they enter the eye. Concealed within the inner corner of the eye, or only the margin of it, black or pied, visible is a triangular shaped cartilage, the *haw*, with its broad part before. It is concave within, exactly to suit the globe of the eye; and it is convex without, accurately to adapt itself to the membrane lining the lid; and the base of it is reduced to a thin or almost sharp edge. At the will of the animal, this is suddenly protruded from its hiding place, passes rapidly over the eye, and shovels up every nuisance mixed with the tears, and then, being speedily drawn back, the dust or insect is wiped off as the cartilage again passes under the corner of the eye.

"How is this managed? This cartilage has no muscle attached to it, and the limbs, and the different parts of the body, when put into motion by the influence of the will, are moved invariably by muscles. The mechanism is simple and effectual. There is a great mass of fat at the back of the eye, and the eye may be easily moved; and this fat is particularly accumulated about the inner corner of the eye, and beneath, and at the point of this cartilage. The eye of the horse has likewise very strong muscles attached to it, and one, peculiar to quadrupeds, of extraordinary power, and by whose aid, if the animal has not hands to ward off a danger that threatens, he is at least enabled to draw the eye back almost out of the reach of that danger.

"Dust, or gravel, or insects, shall have entered the eye, and annoy the horse. This peculiar muscle suddenly acts. The eye is forcibly drawn back, and presses upon the fatty matter. That may be displaced, but cannot be squeezed into less compass. It is forced violently towards the inner corner of the eye, and it drives before it the haw; and the haw having likewise some fat about the point of it, and being placed between the eye and an exceedingly smooth and polished bone, and being pressed upon by the eye as it is violently drawn back, shoots out with the rapidity of lightning, and, guided by the eyelids, projects over the eye, and thus carries off the offending matter.

In what way shall we draw the haw back without muscular action? Another principle is called into play, of which we have already spoken, and of which we shall have much to say—*elasticity*. It is that principle by which a body yields to a certain force impressed upon it, and returns to its former state as soon as that force is removed. It is that by which the ligament of the neck, while it supports the head, enables the horse to graze,

by which the heart expands after closing on and propelling forward the blood in its ventricles, by which the artery contracts on the blood that has distended it, and by which many of the most important functions of life are influenced or governed. This muscle ceases to act. The eye resumes its natural situation in the orbit. There is room for the fatty matter to return to its place, and it immediately returns by the elasticity of the membrane by which it is covered; and it draws after it this cartilage with which it is connected, and the return is as rapid as the projection.

"The old farmers strangely misunderstood the nature and design of the haw, and many of the present day do not seem to be much better informed. When from sympathy with other parts of the eye laboring under inflammation, and becoming itself inflamed, and increased in bulk, and the neighboring parts likewise thickened, it was either forced out of its place, or voluntarily protruded to defend the eye from the action of the light, and could not return, they mistook it for some injurious excrescence or tumor, and proceeded to cut it out. The "*haw in the eyes*" is a disease well known to the majority of grooms, and this sad remedy for it is deemed the only cure. It is a barbarous practice; and if they were compelled to walk half-a-dozen miles in a thick dust, and without being permitted to wipe or to cleanse the eye, they would feel the torture to which they doom this noble animal, when afterwards employed in their service. A little patience having been exercised, and a few cooling applications made to the eye while the inflammation lasted, and afterwards some mild astringent ones, and other proper means employed, the tumor would have disappeared, the haw would have returned to its place, and the animal would have discharged the duties required of him, without inconvenience to himself, instead of the agony to which an unguarded and unprotected eye must frequently expose him.

"The loss of blood occasioned by the cutting out of the haw may frequently relieve the inflammation of the eye; and the evident amendment which follows, induces those wise men to believe that they have performed an excellent operation; but the same loss of blood by scarification of the overloaded vessels of the conjunctiva,\* would be equally beneficial, and the animal would not be deprived of an instrument of admirable use to him."

Of the lampas, and its proper treatment, the highly valuable work just quoted gives the following account.

"Some of the lower bars, (in the upper jaw of the horse's mouth,) occasionally swell, and rise to a level with, and even beyond the edge of the teeth, and they are very sore, and the horse feeds badly on account of the pain he suffers from the pressure of that food on the bars. This is called the *lampas*; and it may arise from inflammation of the gums, propagated to the bars, when the horse is shedding his teeth; (and young horses are more subject to it than others); or from some slight febrile tendency in the constitution generally, as when a young horse has lately been taken up from grass, and has been over-fed, or not sufficiently exercised.

"In the majority of cases the swelling will soon subside without medical treatment; or a few mashes and gentle alteratives, will relieve the animal. A few slight cuts across the bars with a lancet or penknife, and taking care to avoid the principal artery\* and vein of the palate, will relieve the inflammation, and cause the swelling to subside; indeed, this scarification of the bars, will seldom do harm, although it is far from being so necessary as is supposed. To the brutal custom of the farrier, who sears and burns down the bars with a red hot iron, we do most peremptorily object. It is torturing the horse to no purpose; and it is rendering that part callous, on the delicate sensibility of which all the pleasure and safety of riding and driving depend. It may be prudent in case of lampas, to examine the grinders, and more particularly the tushes, to see whether either of them is endeavoring to make its way through the gum. If with the gum lancet, or penknife, two incisions across each other be made on the tooth, the horse will experience immediate relief."

And now, Mr. Editor, before I conclude, suffer me most earnestly to recommend the study of the volume from which I have quoted so largely, to all persons who may be desirous to become acquainted with the anatomy of the horse—with the various diseases to which he is subject, and with the proper methods of treating them. Even if they consult only profit, to the utter disregard of humanity in the management of their horses, they will find no work of its size, I believe, which contains any thing like the same amount of information, both scientific and practical, in regard to all they may wish to know of the subjects upon which it treats. Moreover, it is very entertaining as well as instructive, for the first part of it contains many interesting anecdotes of celebrated English horses, and their extraordinary performances.

JAMES M. GARNETT.

#### NOTES ON THE SANDY POINT ESTATE.—NO. I.

To the Editor of the Farmers' Register.

*Sandy Point, March 17th, 1841.*

It has often presented itself to my mind, that if some of your numerous contributors to the pages of the Farmers' Register, instead of merely detailing the results of some experiments, and these generally only such as are successful, would favor your readers with a series of communications, which would not only embrace the result of any particular set of experiments, whether successful or otherwise, but which would also include a statement of their whole practice and general mode of management, that they would not only confer a greater amount of benefit on the agricultural community, but, in return, would themselves derive a greater amount of individual benefit. Do not suppose that I undervalue these interesting reports of experiments—they have doubtless been the means of diffusing much valuable and useful information; but, as a large proportion of these reports go no farther than a simple statement of results,

\* This vein is along the centre of the upper jaw, and the artery on each side, about mid-way between that and the rows of teeth.

\* The conjunctiva is that membrane which lines the lids, and covers the fore part of the eye.

omitting what is all-important to the general and inductive agricultural reader, a statement of the former and present condition of the soil, on which successful experiments have been made, and a correct detail of the means adopted to obtain such results, the want of this information is liable to lead others into errors, who may be induced to try the attainment of similar results, under circumstances entirely different; and whose unavoidable want of success leads them to doubt or altogether discredit such reports. Nor is the evil confined to the doubting of such reports, but has also a tendency to lessen in the estimation of many the value of agricultural communications, and the valuable journals through whose medium they are circulated and presented to the public.

With these views, and if the mode and object contemplated meet your approbation, I propose in this and subsequent communications to give you a statement of the present condition of the extensive farm now under my care; our general mode of operations, improvements about to be effected, and such results as may be obtained, whether they may prove successful or the reverse. I am well aware of my incapacity to do justice to such a subject; one thing, however, I will promise, that nothing but facts shall be stated; or, that where false inferences may be drawn, they will be the result of error of judgment, not intentional. I am also well aware that communications of this nature from a source so humble, will, with many, subject the writer to the charge of egotism. To such I have no other apology to offer than to state, that though I own neither a slave nor one foot of land, but fill the humble station of manager of a farm, I am willing to communicate my practical experience, not only with the view of benefiting others, but in the hope, that by eliciting remarks from others of more experience and sounder judgment, I may by that means be enabled to attain such additional knowledge as may not only benefit myself, but may also enable me thereby to render my services more efficient and profitable to my esteemed employer. I consider it my imperative duty that my employer shall not only reap the full benefit of whatever practical knowledge or experience I may now possess of agriculture, but that I should use every effort in my power to increase and improve such knowledge, not only for my own, but his benefit. Whatever statements of *practice* may be contained in this, or following communications, must be considered as carried into effect either under the immediate instructions of my employer, or with his express sanction and approbation. Though not a constant resident on his estate, he never loses sight of the operations going on, or the measures most conducive to his interests and the improvement of his property. There are also some of your readers who I know not only consider the attempt of a farm manager to commit his views and practical experience to the pages of an agricultural journal as an unpardonable offence, but who also consider the reading of such periodicals as being entirely beyond his province; and who will also censure the proprietor who keeps an individual so presumptuous in his employment. To such there need no excuse or apology be offered. It cannot but be matter of regret to every liberal mind, that so many of those whose livelihood is obtained as overseers of farms, are not only incapable of committing their views to writing, but

who from ignorance are incapable of reading or appreciating the important benefits which they, and, through them, their employers, might derive from the perusal of such periodicals; perhaps some will say, "Where ignorance is bliss 'tis folly to be wise."

The estate now under my care is that of Sandy Point, situated in the lower end of Charles City county, Va., and now the property of Robert B. Bolling, esq. In the present communication I shall endeavor to give a short and general description of the estate in its present condition, reserving for a future opportunity statements which will point out improvements now in progress or about to be commenced.

The location of this beautiful estate is on the immediate bank of the James River, along whose shores it extends upwards of six miles, and is probably a location unsurpassed by any of the numerous and fine estates in this section of country. The area of the whole is, from old surveys, estimated at 8000 acres; and the area of that portion now under cultivation is 2372 acres, at present divided as follows into, 1st, The Neck, or lower farm of 600 acres, cultivated in three fields of corn, wheat, clover; 2d, Teddington farm, of 700 acres, 600 acres of which are also cultivated in three fields as above, and 100 acres divided into five 20-acre lots and cultivated in 1st. corn, 2d. wheat, 3d. clover, 4th. wheat, and 5th. clover. 3d. Upper Quarter farm of 536 acres. This division of the estate is now nearly one half in wheat after clover and weed fallow, one fourth will be in corn this year, and one fourth in oats and peas as a preparatory fallow for wheat. 4th. The Rowe farm of 536 acres. This farm has also formerly been cultivated in three fields; but contemplating an entire change of the now existing divisions of the estate, there will, as a preparatory measure be no corn cultivated this season on that portion of it, two thirds of which are now in wheat after clover and weed fallow and after corn; the remaining third is in clover and its natural growth of grass and weeds; the whole of this last division will be in corn in 1842.

The surface of the arable land in all of these divisions is level, yet sufficiently undulating to afford facilities for the necessary drainage. The highest portion of the land is probably not more than 20 or 25 feet above high water mark, the texture of the soil throughout is excellent and very nearly uniform, very little of it can be properly considered as a sandy loam, and still less could be classed as a clayey loam; a supposed medium between these would probably best designate the very nearly uniform texture of the general soil. Gravel is very rarely to be met with, pieces of rock of any description are also rarely to be seen. The general character of the soil is, I believe, what you class as a neutral soil; the only exceptions to this character are on the portions most remote from the river, or where the original soil has been washed off by galls. Occasional small spaces are to be found, where the natural growth of broom straw and sorrel would indicate an acid soil. These spaces however are small, and constitute only the exception. The color of the soil presents several variations, the prevailing is however a chocolate. The whole of the soil is susceptible of the highest improvement, and in its original and virgin state was doubtless very productive, and wherever

time has been applied, the benefits resulting from its application have been very decided. The application of calcareous manures has hitherto been very limited. The exertions now making to supply this deficiency, will be noticed in a subsequent communication. The average crops for the last 10 years have been 5000 bushels of wheat, and 10,000 bushels of corn. Six acres are also cultivated in cotton, not as a saleable article of produce, but to supply the necessary material for the clothing of the negroes, and to furnish employment to a number of old infirm women who are unable for field labor. In addition to the present arable portion of the estate, there are upwards of 300 acres cleared, and which has formerly also been under cultivation, and is now enclosed and used as a park, or summer range for cattle and sheep, a portion of it is also included in the hog pasture. The general texture and character of this soil is totally different from that of the now arable land. Neutral soil is here a scanty exception, the acid being the prevailing soil. A considerable portion of the woodlands bordering on the river have formerly been under culture, and are now chiefly filled with a heavy growth of pines, or where free from forest growth, broom straw is abundant; that large portion of the estate yet under its natural forest, is heavily covered with much and valuable timber, the surface is generally level, though broken into occasionally deeper ravines than on the cleared lands. On the borders of the Tomahund creek, which forms one of the boundaries of the estate, and yet in its primitive forest growth, the occasional growth of locust would indicate the presence of neutral soil. The larger proportion of the woodland soil I believe to be of an acid character. There is very little swamp or ude marsh on the estate. On the river boundary there are probably not more than 30 acres in all, and that divided into several and small portions, and might probably be easily reclaimed into permanent meadows. The chief body of marsh is on the Tomahund creek; and the whole there probably does not exceed 100 or 150 acres.

The number of slaves employed in agricultural labor may be stated in round numbers as 90, nearly equally divided as regards the sexes. To this number is to be added 7 carpenters, 2 blacksmiths, 2 sawyers, 1 weaver, 1 sick nurse, and 9 old and infirm men and women employed chiefly in spinning, winding, knitting, making baskets, horse collars, &c. The gardeners, fishers and house servants are not here included. The laboring force may justly be considered effective, quiet and well conducted. The police regulations amongst them are strict, yet salutary and encouraging. They probably exhibit, altogether, more happiness and contentment than is often to be met with amongst so many slaves. In addition to existing regulations prohibiting their intercourse with other negroes, the isolated situation of the estate is highly favorable to maintaining this necessary restriction, and greatly promotes the orderly and circumspect conduct so gratifying amongst them; their general hours of labor are from sunrise to sunset, with necessary intervals for meals. They are comfortably lodged and clothed, and are well fed. An ample allowance of meal, and one half pound of bacon (or its equivalent in beef or fish occasionally) is daily cooked for each hand together with a plentiful supply of seasonable vegetables; a

hospital is kept for the accommodation of the sick, where there is a careful nurse to attend to them and every necessary attention paid to their comfort.

The number of horses and mules employed in farming purposes are 38. These are good and efficient animals. To these are to be added 6 young animals of this description—76 oxen are as so kept for farm purposes, many of these are aged, and with a few exceptions their general description is inferior. The other stock on the farm consists of 30 cows, 1 bull, 37 young cattle, and 109 sheep, exclusive of lambs of this year. The latter stock are only kept for the purposes of supplying wool for negro clothing and mutton for family use. A few lambs are however annually sold. The general character of both cattle and sheep is decidedly inferior. Until recently little attention has been paid to the proper ages when they were permitted to breed, or to guard against their breeding in and in, the inevitable consequences of which have been the deterioration of stock originally perhaps not remarkable for good qualities. Mr. Bolling is now judiciously adopting measures for the speedy improvement of every species of stock, which it is hoped will shortly raise them to greater perfection and value.

On an estate so extensive, the raising of an adequate supply of pork for the heavy domestic consumption is an important item, and probably in no other department of the farm management have the results been less satisfactory. The breed is the common Virginia hog, and the present stock may be stated at 200 hogs. Their description is inferior, the same causes operating to diminish the value of cattle and sheep, as stated above, have been operating on the stock of hogs to an extent even more injurious. Add to this the heavy losses yearly incurred by hogs getting estray and becoming wild. Not less than 50 hogs have been thus lost last season. And what greatly aggravates the nature of such losses, is the fact, that they are often turned loose from their enclosed range, into an extensive body of unenclosed woodlands, by the wanton negligence of individuals hunting within the enclosures pulling and leaving the fences down. Measures are also being adopted to improve the character of this valuable stock, and which will subsequently be more particularly adverted to.

On each of the divisions of the estate, the buildings for farm purposes are ample, though neither arranged nor located so well as they might have been. The buildings, with the exception of those on the Teddington division, are old. An entire remodeling, adapted to the intended improvements on the estate, is now being commenced, and in another communication will be more particularly described. The family mansion house is beautifully located on a gentle eminence about seventy-five yards from the river, having a sloping lawn down to high-water mark, now in process of being enlarged. The garden and grounds around the house are tastefully laid out, and filled with many ornamental shrubs, and is now being further beautified by the planting out of numbers of the most ornamental of native forest trees, which is, in my opinion, in decidedly better taste than by crowding together numbers of expensive and unacclimated exotics. An extensive and thrifty young apple orchard is also well located in the near vicinity of the house.

I fear I have already encroached too far on your patience. If the object of this communication meets your approbation, I will at an early date give you a detail of the various improvements now in progress and contemplated, in the several departments of the rural economy on this estate, as from the above you will easily perceive there is ample room for improvement. Future communications will also point out more accurately existing defects now shortly stated, when we come to contrast them with the improvements effected. Our general mode of management and results will also subsequently follow as leisure and opportunity offer. Respectfully your humble servant,

A. NICOL.

#### INQUIRY AS TO THE PROSPECTS OF SILK CULTURE.

*Charlotte, Va., Feb. 20, 1841.*

The Register has contained latterly but little on silk culture, which I fear is a strong indication that you are by no means sanguine of the success of the experiment. I should be much pleased to learn your sentiments at this time, with all the lights which the experience and speculations of culturists have thrown on that subject. Our acquaintance, Mr. Edmund Morris, with a liberality and benevolence equalled only by the gratuitous distribution of his paper on silk culture and multicaulis (a costly gratuity to some poor souls) is circulating a new paper without charge. He seems to think the business cannot be carried on with success without the aid of his invention for ventilating. Do you think it can be with all the facilities of his discoveries and the 'Burlington Silk Record' in the bargain?

Our correspondent has correctly inferred that we are much less sanguine than formerly of the success of silk culture in Virginia; and we have already stated at length in an article in the last volume, (page 510,) our latest views on this subject. We presented the grounds on which had rested our previous almost perfect confidence, and also the causes of subsequent disappointments, and great abatement of hopes and expectations. But we did not then despair, and have not yet despaired; and hope that the further investigations, and patient and full trials of the many intelligent culturists who will still persevere, will serve to show how the diseases and disasters of last year may be avoided, and general success and profit be achieved. We have much, though not entire confidence, in the new theory of Dr. Gideon B. Smith, as to retarding the hatching of silk-worms' eggs; and, if he is right in his views, they certainly serve to account for most of the failures from disease last year. We have not designed, and would be very unwilling, to say any thing to discourage our readers from further and sufficient trial of silk culture—though (now even more

than formerly, but as at all times,) we would recommend the utmost care and caution to be used in their mode of procedure and operations.

In regard to the more particular inquiries, we have only to say that we know nothing of the merits of Mr. Morris' newly invented silk-worm frame, except from his own publications. We hope it may be all that he recommends it for; but we confess our general distrust, in the absence of the most abundant proof, of the facts, information, instruction and advice, which have proceeded in such quantity from the same abundant source.—ED. F. R.

#### ON DESTROYING SLUGS BY LIME.

From the London Farmer's Magazine.

Sir,—As the season is again approaching, when innumerable fields of what ought to be our most productive wheat land, (that is, our strong clays after beans,) afford to the agriculturists but a miserable prospect, owing to the ravages of the slug; allow me through the medium of your most excellent journal, to inform them of a cheap and effectual cure,—one which I have adopted for several years and always with the greatest success. My plan is as follows:—as soon as the wheat should show itself from one end of the drill to the other, but which, owing to their voracious appetite, appears but on the milder and finer parts of the field, I procure as many four bushel sacks of unslaked lime fresh from the kiln, as I have failing acres of wheat, and place the same in one or more heaps in the field, as occasion may require, and the dryness of the ground will permit; then choosing the first mild and misty day, (or indeed the first day I can find them well out,) send two men as sowers into the field, each taking a breadth of four yards or one hand with us, the first man always keeping in advance from 15 to 20 yards. The instant he has scattered the lime, to extricate themselves they cast away their only shield of defence, which is their slime; the second man then overtakes them in their naked state, and the smallest particle falling upon them is instant death. I consider two great savings are effected by this mode of killing them, time and expense. Having noticed several people twice ploughing their land, harrowing, rolling, &c., for no other purpose than that of destroying them, and whilst doing the same, perhaps a heavy rain sets in, and the seeding put off till spring; whereas, by my plan, they may proceed with getting in the wheat as soon as the beans are off the land, and the total expense of destroying the slug, including carriage, sowing, &c., does not exceed from 3s. to 3s. 6d. per acre.

Should this meet with the attention of any brother clay-land farmer, I have not the least doubt of its success, and shall feel happy in being instrumental in procuring him a full crop of wheat. I remain, sir, yours very respectfully,

Nov. 23rd. A LINCOLNSHIRE FARMER.

## CALCAREOUS EARTH DISCOVERED IN A NEW FORM AND A NEW LOCALITY.

To the Editor of the Farmers' Register.

*Charles Hope, Abbeville District,* }  
*S. C., March 14th, 1841.* }

As you are constantly complaining that planters refuse to communicate any little information they may possess, or to request solutions of doubts and difficulties, that may present themselves, I have at last been tempted to acquaint you with a discovery that I have made of lime in some one or other of its numerous combinations, and at the same time to request the aid of your knowledge, and experience, to ascertain whether the discovery is likely to lead to results beneficial to the agriculture of the section of country in which I reside.

My plantation and residence is in Abbeville district, South Carolina, about half way between the centre of the district and Savannah river, distant about six miles from the latter. I have been particular in designating my location, as it has been universally believed that no lime existed in this part of the state. The region of country to which I refer, lies between the shell marl formation, which runs through the low country, (below Columbia, crossing the Savannah river into Burke county, Georgia,) and the lime-stone of Habersham in Georgia, and Spartanburgh in this state, distant respectively about 80 miles. My attention has been for some years (thanks to your work) turned to the subject of lime and marl, and accidentally, a short time past, I found the substance which I will proceed to describe to you.

I commenced, some months past, draining a portion of low grounds on Little River, a tributary of the Savannah, for the purpose of cutting off the hill waters which in rainy seasons made it too wet for cultivation, and also for turning a stream which ran through its centre, so as to alter its course to the base of the high lands; the ditches are several hundred yards apart, and their united length would be rather more than half a mile. The land is all subject to be covered several inches by the very highest freshets. The body of land to which I particularly refer, contains, on both sides of the river, about 300 acres. The great proportion of the land is a rich, strong alluvial soil, of a dark chocolate color, to the depth of 10 to 12 inches; beneath this first coat lies a light blue, and very tenacious clay, with apparently no silicious matter, and invariably at the depth of 30 inches from the surface, we came to the marl, if it be marl, to which I alluded. This body of earth is not so tenacious as the superincumbent stratum of blue clay, and when thrown out by the spade crumbles a little, but still adheres in masses. This stratum is 13 inches thick along the whole line of both ditches, and contains a substance of a dirty white color, resembling in shape and size Jerusalem artichokes, the largest mass never exceeding the size of a hen's egg, and the smallest not larger than mustard seed. These concretions are so hard as to require considerable pounding to reduce them to powder; but when well pounded, become as fine as flour. I observed that when struck with the pestle, they separated in layers, or thin peelings, if I may be allowed the expression, and that the inside was of a bluish color.

I analyzed a number of the concretions, (according to your directions in Vol. 1st,) and found

them to contain 80 per cent. of the carbonate of lime. I then took a spade full of the earth, without selection, as it was dug up, containing of course many of the larger and smaller concretions, and carefully picked out all the concretions larger than a pea. I then dried and reduced to powder about one pound of this earth, from which I took 100 grains, which yielded 42 per cent. of carbonate of lime. I afterwards got the aid of a gentleman who, from his knowledge of chemistry, is fully capable of accurate examination, and the result he obtained corresponded to mine within a fraction. The growth of timber on this land is birch, poplar, ash, maple, and some gum. It may be necessary to state that the high lands, adjoining the low grounds, were originally productive chocolate or mulatto lands, and hard to wear out, or they certainly would have been completely exhausted ere this.

I can make no use of this substance for the improvement of my land; for in order to manure an acre of upland, I should be forced to destroy the fifth or sixth of an acre of land, worth 50 dollars. It is therefore useless to me, unless I can discover a thicker deposit; and it is respecting the probabilities on this point that I request the aid of your knowledge.

It may be proper to add, that on sinking a pit below the stratum of marl, say to the depth of 5 feet, we came to sand completely saturated with water, and the spade sunk almost by its own weight, two feet or more. The concretions of marl have no appearance of shells or of the impressions of shells. Excuse the length of this communication, which is at your service to burn or print.

CHARLES T. HASKELL.

The facts stated above are to us mostly of novel character, and highly interesting. The stratum, as described above, is certainly very rich, and, we infer, might be used for manure just as when dug up, without the labor of separating and pounding the lumps. However, so far as the larger lumps might be easily separated, it might be advantageous and economical to do so, for the purpose of burning them to quick-lime, either for cement, or to reduce them (if very hard) more quickly for manure, than mere exposure would. The concretions, from the description, seem to be like those found in Prince Edward county, Virginia, and in Loudoun, the first body of which was described in the first volume of the Farmer's Register, and the latter in the eighth volume; but the whole deposit of the South Carolina body is much richer than those in Virginia.

We differ much from Mr. Haskell, as to the supposed difficulties and objections to the use of his marl. Instead of admitting that the marl furnished by a certain space would manure only five or six times as much surface, we suppose that one acre would furnish enough to marl 50 acres. For a dressing of a quarter of an inch thick would be very heavy, (perhaps much too heavy,) and at that rate, the 13 inches thickness of the stratum

would serve to cover 52 times as much land as the space dug from. Again, we see no reason why the space thus dug up, and the two upper strata mixed together, in the digging, should be ruined, or even much injured, by the operation, unless by lowering the surface too much, and thereby increasing the danger of inundation by freshets. The mere mixture of soil and subsoil, especially when the marl itself would be more or less disseminated throughout the mass, we are sure would still leave a good and improving soil. Besides, by a proper course of procedure in digging, and without much additional labor, the original rich surface soil might easily be kept principally on the top, after removal. And, provided the land could be kept as dry as before, we think it probable that the ground thus dug up and shifted, would be even a more productive soil than before.—ED. FAR. REG.[

#### CANKER WORMS—CHICKENS.

From the Farmers' Gazette.

*Mr. Storer* :—I wish through the medium of your gazette, to call the attention of our citizens to a fact which occurred within my own personal knowledge; and if like causes produce like effects, (and I see no reason in this case why they will not,) a fact of importance to all who are sufferers from the ravages of the canker worm. The fact is this :

In the spring of 1840, I purchased three hens, which raised a brood of chickens each. When my fruit trees in my garden became literally covered with the canker worm, I thrashed them with a pole to the ground, where they were picked up by the chickens as greedily as they would pick up corn or grain. Several times a day I fed them in this manner, until I had entirely cleared my trees of the worms. Now, as to the result: in the month of November last, in some very warm days, when the moths were crowding up the elms in front of my residence by hundreds, I made repeated examinations of my fruit trees in the garden, for the purpose of preventing the moths from ascending; but to my surprise, I found (nor could I discover) but a single moth on a tree in my garden, where there had been for several successive years before, as many millions of worms as there were locusts in Egypt.

This method, I believe, will be found altogether the most simple and economical, of ridding effectually our gardens of this troublesome insect, for it will be found that the chickens, while young, are of immense advantage in other respects than merely to clear off the canker worms. The millions of insects of every description, which are revelling in luxury on our cucumbers, our cabbages, and in fact every vegetable in the garden, at a heavy tax upon our labor and patience, are entirely eradicated by these industrious birds. As soon as it is light in the morning, and before the cut worm has finished his depredations upon our beans and cucumbers and retreated in safety to his bed in the ground, they have found and stopped his

mischievous. Then again, in the winter you have the pleasure of picking their bones in a fricassee, or a pie, or any other method you prefer.

But their value as a complete annihilator of the canker worm, is beyond praise. Let a farmer but set four or five coops in his orchard of a hundred trees, and by a little attention for a few days in cleaning the trees, his work is done for years, *the race is destroyed*. It is, in my opinion, better than all the lead pipe in the country, and no expense. Yours, &c., G. F. H. R.

New Haven, March 10, 1841.

#### ON THE DURABILITY OF NITRATE OF SODA.

From the Mark Lane Express.

*Sir*,—I observe, in your last paper, an inquiry repeated by Mr. Symonds, as to the durability of cubic-petre, as a fertilizer, which has been recently made on several occasions. There is no doubt but that its effects extend beyond the first year of its application; this is certainly the case with saltpetre—thus Mr. Kimberley, of Trosworth, when he used it upon his clover land, found that its effects were equally great upon the following crop of wheat.—*Journ. Roy. Ag. Soc.* vol. i. p. 276. Mr. Wilsheer experienced a similar result.—*My Essay on Saltpetre*, p. 30. Mr. Lee, who successfully used it for barley, found it improved in an equal ratio the following crop of clover.—*Edin. Quar. Jour. of Ag.* vol. i. p. 302. Mr. Oakley, of Preston, in Hertfordshire, says, "it survives to the succeeding crop."—*Essay on Saltpetre*, p. 38. It is a very erroneous conclusion, that saline manures are speedily washed out of the soil by the rain, for I ascertained some years since, by very careful experiments with common salt, that at the expiration of twelve months, sixty per cent. of the quantity originally applied remained in the soil.—*Essay on Common Salt*, p. 156.

I am glad to find that the use of cubic-petre is extending so successfully. In some recent trials on the estate of his grace the Duke of Norfolk, detailed by Mr. Anderson of Oakley, the following results were obtained (for an account of which I am indebted to Mr. E. Purser, of New Bridge-street, an extensive dealer in these powerful salts):—

One hundred and fifty pounds' weight of nitrate of soda per acre, were sown on a portion of a field of clover in April, 1840; the remaining part of the field was not manured. The clover was cut on the 6th of July; on the 11th, when in a good state to cart, the clover was weighed.

		Ton. cwt. qr. lb.				£ s. d.			
Produce per acre, where the nitrate of soda was sown		3	1	1	20	value 4l.	per ton	12	5 9
Produce per acre, where the nitrate of soda was not sown		-	-	-	2	4	1	24	value 4l. per ton 8 17 10
Difference in quantity per acre		-	0	16	3	24	In value	-	3 7 11
Cost of nitrate of soda per acre, and sowing		-	-	-	-	-	-	-	1 9 0
Profit, per acre, from the use of the cubic-petre		-	-	-	-	-	-	-	1 18 11

The benefit derived from thus increasing the produce of clover will hardly ever terminate with the first crop. It is a well-known fact amongst

the Essex farmers, that by whatever means they increase the produce of clover, the yield of the following crop of wheat will be in a similar ratio improved. I am, sir, yours, faithfully,

CUTHBERT W. JOHNSON.

14, Gray's Inn Square, Dec. 3, 1840.

#### ON THE IRRIGATION OF RICE LANDS BY PUMPS.

From the Southern Agriculturist.

I have been desirous to obtain some machine to irrigate rice lands: in furtherance of this object I wrote to Mr. J. Beare, Pall Mall East, London, the inventor of a pump, said to combine many advantages. I propounded several questions concerning his pump, and I enclose you his reply. Some rice planters are situated on rivers, that in dry seasons become too salt at high water, to flow the land with, but which are fresh from half ebb to half flood tide. An efficient pumping apparatus would render lands in such situations as safe to plant, as those not having the evil of salt water to contend with. Inland swamps too might be drained or flowed at will. The only objection I see to the pump, (taking Mr. Beare's replies to be correct, which I do not doubt,) is the price. The quantity of water lifted per minute, would flow an acre six inches deep in twenty-four and a half minutes. If you could obtain any further information on this subject, you would perhaps benefit a number of rice planters by publishing it, at any rate you would owe one of your

SUBSCRIBERS.

7 Pall Mall East, London, }  
6th July, 1840. }

Sir—I have the favor of your letter under date, Savannah, (Geo.,) 15th May last, acquainting me that Capt. T. Baylis, of the British E. I. Army, has conveyed to you an opinion, that my *new plan, or new principle* in pumps, must be extremely useful in irrigating rice lands.

You have submitted to me also a number of questions, and I have much pleasure in putting the same again under your notice, together with my replies thereto, given seriatim, and which will, I think, be found perfectly clear and satisfactory.

I am very happy to learn that many rice plantations in your quarter of the world require to be improved and benefited in the way you point out, that much uncultivated land also may be brought into use, with a cheap and durable apparatus for irrigation and draining.

In the low lands throughout England, the patent pumps are getting into general use, and all the old methods are being fast laid aside. We are beginning now to experience a good continental demand, and have lately had with us a deputation from the king of Holland, to consult on the draining of the Haerlem lake.

I am quite sure, if I can have the honor of a liberal correspondence with you, no doubt can exist but a considerable number of our machines, both as pumps and as hydraulians, will be readily and advantageously disposed of.

And if, on the receipt of these my respects, you

will indicate from the descriptions given, what machines shall be forwarded to you, at the same time favoring me with your remittances to any amount you may think proper, from £50 to £500, you may depend that the machinery shall be prepared and forwarded with the utmost care and attention, and that the prices charged for the same shall be the very lowest possible, to insure the carrying out a liberal correspondence. Waiting the favor of your advices, I am, with respect, sir, your most obedient servant,

JOHN BEARE.

*Ques. 1st.* What quantity of water can be raised per minute from five to nine feet high, by a ten-horse-power steam engine driving a pump or pumps?

*Ans. 1st.* We are now working a pair of hydraulians under my patents, with a ten-horse-power steam engine, and this pair of pumps deliver, at an altitude of eleven feet, twenty tons of water per minute, two hundred and ten imperial gallons to the ton, and a cubic foot of water being sixty-two and a quarter pounds, the stream produced by this pair of pumps, when in full action, is nine feet wide and fourteen inches deep.

*Q. 2d.* Will it make a difference in the working of the pumps, if it be placed in tide water, which rises and falls six feet.

*A.* The effect of tide water is quite immaterial, otherwise than when the water is highest, the pumps will work the lightest.

*Q. 3d.* How many pumps, and what power will be necessary to raise seven hundred and thirty-five cubic feet of water per minute, from five to nine feet high?

*A.* Reckoning the cubic foot of water at sixty-two and a quarter pounds avoirdupois, and ten pounds being the imperial gallon, seven hundred and thirty-five cubic feet of water per minute will be equal to twenty-one tons, eighty-three gallons per minute. And, as lifting from five to nine feet high only, is so much less than eleven feet, as stated in answer to query No. 1., a ten-horse engine to this power lift, would give by the pair of pumps about nine hundred cubic feet, or twenty-six tons, one hundred and sixty-five gallons of water per minute.

*Q. 4.* Will your patent pumps be less liable to injury from alternate cold and heat, moisture and dryness, than the pumps in ordinary use?

*A.* The patent hydraulians can take no injury, if the working parts are kept well oiled.

*Q. 5th.* Can your pump, if it becomes damaged, or worn by use, be repaired by mechanics, not particularly drilled to such work?

*A.* The patent pumps can readily be refitted by any one capable of handling a tool, requiring no nicety.

*Q. 6th.* What will be the price of a pump or pumps which will raise seven hundred and thirty-five cubic feet of water from five to nine feet high per minute?

*A.* The price of a pair of patent hydraulians, as set forth in answer to query No. 1, and to carry out the work therein stated, will be £265.

*Q. 7th.* Will either manual labor, horse power, or a wind mill be as cheap and effectual in working your pumps, as a steam engine?

*A.* Cannot estimate the cost of manual labor with you. Wind is proved a bad motive-power



for raising water, because of its uncertainty. And steam-power is contingent on price of fuel with you.

*Pro forma*.—A double action patent fountain pump in cast iron, cast iron suction or breeches piece for five-inch piping, with cast iron standard and wrought iron fire engine leverage, and wood cross pieces, having brass expresser buckets, with butterfly valves, leather connectors in metal rings, screw bolts, metal lower boxes and spindle valves, wrought iron rods, bolts, nuts, pins and keys, complete, to power No. 10\*—£18 10d.

A double action patent fountain pump in cast iron, as above, complete to power No. 8†—£26 10d.

A double action patent fountain pump in cast iron, as above, complete to power No. 5‡—£35.

The above machines are built expressly for manual labor; they are very simple in their construction, but of course the labor, whether sharp or slow, will supply a larger or less delivery.

Power No. 10, double action, as above stated, at thirty strokes per minute, delivers five thousand four hundred gallons per hour, and at thirty-five strokes per minute, delivers six thousand three hundred gallons per hour.

Power No. 8, double action, at thirty strokes per minute, delivers nine thousand gallons per hour, and at thirty-five strokes per minute, delivers ten thousand five hundred gallons per hour.

Power No. 5, double action, at thirty strokes per minute, delivers twenty-one thousand six hundred gallons per hour, and at thirty-five strokes per minute, delivers twenty-five thousand two hundred gallons per hour.

#### ANALYSIS OF PRAIRIE SOILS FROM MONTGOMERY COUNTY, (ALA.)

*By Professor Shepard.*

From the Southern Agriculturist.

Three specimens of prairie soil were brought to me for examination by Dr. C. Bellinger, of Alabama. They were taken from a plantation seven or eight miles in a south-easterly direction from the town of Montgomery.

No. 1 is a fine black mould from timbered land, which was situated rather low. It produces cotton to advantage when the season proves dry, and is well adapted to other crops, whether the summer is dry or wet. It varies in depth from six feet to one inch.

No. 2 is a fine enuff-colored soil, and is the best land for cotton in the country. Small grain (oats, wheat and rye,) and corn sometimes do well upon it also; but it is less suitable for these crops than No. 1. It varies in depth from one inch to ten feet.

No. 3. This soil is called "bald prairie." In color it is grayish white, with a slight tinge of yellow, or fawn. It coheres into small lumps, which

\* This engine will deliver, with a constant flow, about six thousand three hundred gallons per hour.

† This engine will deliver, with a constant flow, about ten thousand five hundred gallons per hour.

‡ This engine will deliver, with a constant flow, about twenty-five thousand two hundred gallons per hour.

are variegated from the presence of white calcareous spots—the remains of shells. It is considered as poor land, though it answers for small grain and grasses tolerably well. It is not adapted to the cotton crop.

No. 3 forms the underlie of No. 1 and No. 2, and is itself found resting upon the "rotten limestone."

Equal weights of the above soils were thoroughly humected with pure water, when their weights had increased from 100 to

177	-	-	-	-	-	in No. 1.
157	-	-	-	-	-	in No. 2.
162	-	-	-	-	-	in No. 3.

After drying for 48 hours in a room, at 70°, their weights were as follows:—

101.7	-	-	-	-	-	in No. 1.
101.5	-	-	-	-	-	in No. 2.
102.0	-	-	-	-	-	in No. 3.

No. 1, in drying at a temperature of about 320°, lost 8.8 p. c. of water; after which it was ignited until all organic matter present was dissipated: the additional loss thus accruing was 16 p. c. The alumina, carbonate of lime and silicious ingredients were then determined as usual. The result of which inquiry, gave in the hundred parts of earthy matters, as follows:—

Alumina, with peroxide of iron,	-	12
Carbonate of lime,	-	10
Insoluble silica (or fine sand,)	-	78
		100.0

No. 2.—

Water of absorption,	-	-	-	6 p. c.
Organic matter,	-	-	-	8 p. c.

The proportions among the mineral constituents were as follows:—

Alumina and oxide of iron,	-	8.
Carbonate of lime,	-	7.7
Insoluble (fine sand,)	-	85.5
		101.2

No. 3.—

Water of absorption,	-	-	-	7 p. c.
Organic matter,	-	-	-	5 p. c.
Carbonate of lime,	-	-	-	35 p. c.

I did not determine the proportions of alumina and silica, presuming that their ingredients have to each other a ratio similar to that found in Nos. 1 and 2.

The iron in this soil is partly in the condition of a carbonate of the protoxide, in place of being a hydrated peroxide, as in Nos. 1 and 2.

Charleston, (S. C.,) March 19th, 1841.

#### NITRATE OF SODA.

From the London Farmers' Magazine.

Capt. Alexander has published, at the request of the East Suffolk Agricultural Association, the essay on the soils of that district, for which he obtained Mr. Long's prize. It contains much that is valuable, and from it we select the following extracts, which particularly appertain to some of the soils of this county.

"The employment of nitrate of potash (salt-petre) and nitrate of soda (cubic-petre) have of

late been used to a great extent, and there appears to be no doubt of the beneficial effects; and it forms a fair presumption, that the fertilizing power of our compost heaps may be attributable to the quantity of calcareous nitrate, formed by a due admixture of earth and manure in our usual mode of forming composts.

"In Prussia, the nitrous earth is prepared so much after the manner in which we form compost heaps of manure, that I must be excused for transcribing the method as I find it in the *Encyclopædia Londinensis*. 'Five measures or parts of black vegetable earth, or the earth of subterranean caverns, are mixed with one measure of wood or vegetable ashes, and some straw; these articles, beat up with water of dunghills, or draining of yards and sewers, are formed into walls or beds, twenty feet long and three feet wide below, two feet wide at the top, and six feet high; they are covered with light straw, and moistened from time to time, and at the end of the year are fit for washing.'

"In Malta they employ the most porous calcareous earth, mixed with straw; a layer of this earth and a layer of dung alternately follow each other, until they are six feet high; this is sprinkled with water from dunghills, and occasionally turned, it then becomes fit for washing in three years: during the first year the beds are sprinkled over with slaked lime every month.

"In Sweden, a layer of meadow turf, ashes and lime, and the draining of sewers, stables, &c. are sprinkled over in a similar manner; then a layer of straw is put on, and these layers are continued above six feet. These beds are defended from rain, and occasionally moistened with the drainings of stables, &c.; they then begin to yield nitre at the end of a year, and continue to yield it for ten years; it is swept off every eight days, and after each sweeping is watered as before; the remaining matter at the end of ten years forms an excellent manure.

"In the canton of Appenzel, they take advantage of the situation of their stables, which are built on the sides of mountains, to have a trench under the floor; into this trench they cast porous earth, and emptying it once in three years, thus obtain a ton of saltpetre from an ordinary stable.

"Whoever compares these and similar modes of obtaining nitre, with our common practice of raising compost heaps, will be struck with the coincidence, that both appear to be managed for a like purpose; and if so, that in the proportion in which we raise nitrate of potash, (saltpetre,) and nitrate of soda, (cubic-petre) so is the value of our compost heaps, more or less; but the inference to be drawn is, that we may pursue the system with more accurate results by a slight attention and observation. First then it would appear, that in collecting our calcareous earth, whether it be chalk, crag, marl, or clay, it should if possible be chosen from the north face of the pit, and where it has been some time exposed; that it should be mixed in much larger proportion to the manure than is generally practised; that it should lay in alternate layers, rising six feet high; that it should be occasionally watered with the water of dunghills, drainings of yards, or where this cannot be obtained, with salt and water, slaked lime being occasionally added, and that these heaps should have one whole summer

or year to propagate nitre. We are also instructed in the use of mortar rubbish, gypsum, &c.

"There is a practice among the smaller farmers, who keep a few young stock and cows in heavy land, of forming their compost heaps from the out-hollowings of ditches, with small proportions of wet straw from their cattle yards, in which no great quantity of manure from the cattle exists; and I have often been surprised that sufficient effect could be produced by so small an admixture of manure, among so much apparently inert matter; but when we consider that this assemblage of materials from the ditches comprises the facings of banks, which have been shaded, and the dead leaves of the fences, and water washing from the surface soils, I am inclined to attribute the good effects to the production of nitre by these manure heaps, and to suggest that if they could be allowed more time to collect nitrogen from the atmosphere, they would be more valuable.

"It would then appear advisable in forming manure heaps, to place them at the north side of a barn, near to some tank into which the drainings of the yard are collected, from whence they may be watered; and to keep them covered with light straw, and in other respects to imitate the artificial formation of nitre beds above described, and especially to allow the heaps a whole year; this may be afforded by allowing them to have so much calcareous and clayey compost, as to form two heaps from the same quantity of manure as, under common circumstances would be appropriated to one, and I am inclined to believe that one load would prove as valuable as two. I am aware that the advocates for using raw manure, will look upon my recommendation as erroneous and militating against their views. I will come to this subject presently, and ask for a suspension of judgment; at the same time admit that rather than lose the virtues of the raw manure, which I have seen too frequently lavishly expended in evaporation, and by drainage, that under these circumstances the advocates for using it have much to say in favor of the practice; but when compost heaps are formed with due attention to the above observations, it will no doubt lead to beneficial results.

"The result of my observations upon chalk is, that it is valuable as an addition to sand, mixed lands, and loam, gravel, London clay, and most especially to peat, or fibrous deposit; and as such soils are generally deficient in this constituent of all fertile lands, an addition of this to the above enumerated ones affords very immediate and beneficial effects; but in all the soils and strata compounded of the three; chalk, London clay, and marine deposit, a sufficiency already exists in the compound, and therefore on these soils its value is chiefly to be estimated by its combination with other substances, so as to form chemical affinities, and produce other compounds.

"Where soils are composed of chalk without a due admixture of silicious matter, the epidermis or outer coat of the straw is not so hard as it should be. On these lands mildew is prevalent, while near the sea coast where the marine deposit of sand forms the principal ingredient, mildew is rarely to be met with.

"I shall be understood better if I explain the nature of mildew. 'Mildew' is a parasitical plant

of diminutive growth, which has no power of growing except by the supply of the sap from wheat, straw, or other substances exuding from vegetables; the seeds of this plant are floating in the air generally in the summer time; it is supposed by some to be fostered and brought into maturity by the barberry bush, and it is probable that this plant may afford it support without itself suffering perceptibly, and seeding may supply seed to other plants, and on this account mildew may be first discovered in the neighborhood of the barberry; but unless the predisposing cause existed in the stalk of the wheat, the mildew could not by possibility take effect.

"Now the predisposing cause is in a great measure in the soil, and thus we find some districts much more liable to its attack than others. When the soil is very deficient in silex, or not having that due mixture which enables the roots to absorb sufficient silex to form a hard epidermis; the object is to add such substances as will afford the power. I therefore recommend sand, red sand which contains oxide of iron is the best, but drift sand and road sand, the harder particles of cinder dirt, refuse from the soap boilers, barilla and salt, will be the most efficacious remedy. A high state of cultivation will not improve these lands so much as a supply of these component parts of a hard epidermis to the straw; for these lands are generally in themselves good staple lands, and, if properly managed, highly productive in wheat and beans.

"I have dwelt thus long upon the chalk formation, because it is one which forms the greatest variety in its chemical compounds, and exists in the greatest abundance."

#### ACTION OF ACIDS IN SOILS.

Extract from the Proceedings of the first Agricultural Meeting, in Boston. Reported by the Agricultural Commissioner.

At the conclusion of the address, some desultory conversation took place, as to the mode of conducting the meetings, when Dr. Charles T. Jackson, the Geological Surveyor of Maine, Rhode Island and New Hampshire, was kind enough to respond to an invitation to give some account of the agriculture of New Hampshire, it having been announced to the meeting that a farmer in New Hampshire had this year raised more than one hundred and thirty bushels of corn to the acre.

Dr. Jackson remarked that he had visited the farm on which this corn had been raised. It is situated in a place called Merino Island, in Lake Winnepiseogee, and owned by E. H. Derby, in Boston. The land is a coarse granite soil, and is under high cultivation. A large stock of cows and sheep was kept upon the island, and manure was abundantly supplied. The island, on account of the water, is little subject to frosts. (This farm has been repeatedly distinguished by its excellent crops and its very profitable management, of which an account was given at the meetings, the last year.—*Reporter*.)

Dr. Jackson proceeded to speak of the lands on Connecticut river in New Hampshire. The lower alluvions are remarkable for their grass

crops. The farmers on the upper parts of the river are now in the habit of appreciating their manure much more highly than formerly. In general, the farmers are very ignorant of the mode of forming compost manures. It would be easy to instruct them in the means of converting many substances, now useless, into the most valuable manures. The theory of chemical action is now better understood than formerly. Where rotten logs are suffered to lay upon the ground, no vegetation grows around them; yet these may be converted into manure. Peat, unmixed, suffered to lay upon the ground, produces only sour crops. On this account the Long Island farmers objected to its use. All vegetable substances, in undergoing fermentation in the process of decay, produce acids; but, by the application of alkalies, there are rendered not only harmless, but useful. The decomposition of small quantities of animal substances produces ammoniacal gas, an important element in vegetable growth. By the application of lime this ammonia is absorbed and held for the use of the plant, to be taken up by its vital action. To the credit of many farmers, it may be said that, although ignorant of chemical processes, they are eager for instruction, and ready to try experiments.

The doctor proceeded to compare briefly the soils of the Connecticut and the Merrimac. The soils of the Connecticut are more favorable to wheat than the Merrimac. (There are some material facts in the way of conceding this point, though, perhaps, the position may be admitted upon the whole.—*Reporter*.) The Connecticut river soils are calcareous; the Merrimac soils granitic. The rocks in New Hampshire, composed of granite and mica slate, disintegrate with remarkable rapidity. The quantity of vegetable matter in the Connecticut soils is not abundant, not exceeding seven or eight per cent. (This is not a small comparative amount.—*Reporter*.) The apocrenate of soda abounds in Connecticut river soils. Geine consists of the apocrenic and crenic acids combined with lime, soda, manganese and potash. It forms soluble salts with potash, and, in this form, is strongly favorable to vegetation. Feldspar and mica, the constituents of granite, contain potash.

The great slides from Mount Washington, which, in 1827, proved so fatal to the family living in the Notch, though consisting of pulverized masses of granite, are now covered with a luxuriant vegetation. Soils will be found forming from original rocks. The rocks and soils become converted into very fine powder by the influence of acids in the atmosphere, and the action of living plants upon them. How powerful this action is, may be known from the fact that hyacinth bulbs will corrode and decompose the glasses in which they are grown, (Silex enters largely into many plants, and Liebig is of opinion that pounded glass, the silicate of potash, may hereafter be used as a manure, in certain conditions of the soil.—*Reporter*.) Plants, by their vital action, will decompose rocks. Rocks, composed of feldspar and mica, have a proportion of potash, and the plants will get at and assimilate it. Chemistry has not yet discovered the food of plants. In certain stages of their growth, they obtain carbonic acid from the air. The decomposition of manures in the soil supplies them with nitrogen

and carbonic acid, and this carbon is converted into wood.

The doctor kindly promised to enter more largely into the subject at some future evening.

H. C.

#### PEAT COMPOST.

From the New England Farmer.

Almost every agricultural writer is inclined to ride some hobby. *We find ourselves* inclined to bridle and saddle "muck"—to buckle on spurs and drive ahead. The way before us is *miry*, and we may get bespattered; but a little mud has had no terrors for us in days of yore, and we have no fears that we shall prove a coward in leading as many farmers as will follow us, to an attack upon swamps and muck holes.

These bog meadows are among the best lands in the eastern part of Massachusetts, and they contain in abundance materials by which we may, and by which we *shall*, in a few years, greatly enrich our uplands. These bogs are the most valuable part of our farms. This assertion is made deliberately. We are aware of its extent and its import. We have made it seriously, and we predict that not many years will pass away before its truth will be generally admitted.

Leaving at present all consideration of their worth for cultivation, we wish to draw attention to them as sources from which manure can be obtained. Muck, *properly prepared*, and spread over our uplands, will greatly enhance their fertility. "Stop, young man"—methinks I hear the aged farmer saying—"Stop, young man. I have used this muck, and experience tells me that it is *sour* stuff, doing often more harm than good to the uplands. Such is the lesson which *experience has often taught*." We do not deny it—we do not doubt it; we know that it is true. Muck, as it comes from its bed, is often, is almost always, *sour*; it will impart of its sourness to the soil on which it is applied. This sourness is the natural product of the decomposition which the vegetable matters composing the muck have undergone. And until that sourness is removed, this meadow mud is not a manure; it does not furnish food for plants; but as soon as the sourness is removed, as soon as the acid is neutralized—this muck is nourishing to the crops that we cultivate.

How then can we remove the acid or counteract it? Exposure to the actions of frosts and winds, rains and suns, will do much towards effecting the desired change. Farmers might do well to have three or four years' supply always on hand, and then not use that which has not had three or four years' exposure to the weather. But it is not necessary to wait thus long in all cases before we avail ourselves of the use of this article. We can, by the use of animal manure and lime, neutralize the acid of the muck in a few months or weeks, and thus more speedily enlarge our manure heaps.

The principles of making composts from muck, dung and lime or ashes, as recommended by Dr. C. T. Jackson, of this city, we gave in our report of his remarks at the State House; but deeming them most highly important, we make no apology for repeating them in our own words.

Take one cord of dung, and mix it thoroughly with two cords of muck, that has been for several months, at least, exposed to the action of the atmosphere. Then apply one half of a cord of muck to the outside of the heap, as a coating; pat this coating hard and smooth as you can with the shovel. If the whole be covered with straw or hay, this will be an improvement. Let the mass lie in this state for several months; to mix in the autumn and suffer to remain until spring, is a good course. Then, about 10 or 15 days before the manure is to be applied to the land, take one bushel of unslaked lime, to a cord of compost. Slake this lime, but do it with so little water that it shall be a fine, dry powder. Now throw over the heap, mixing this lime well into the mass. Again coat the whole heap with another half cord of muck. The whole four cords in the course of two weeks will become good manure. The ammonia given out by the dung, will have neutralized the acid of the muck.

Heaps formed at this season my answer for use after the middle of May; though it would be better to allow a longer time. We make an earnest appeal to such farmers as have the materials in readiness to try this process and *adhere closely* to the rule. We wish to know distinctly whether science here is furnishing a valuable rule to guide us in our art.

Imagination carries us, reader, to your fireside, and hears you saying, "I'll try that, but I'll save some of the labor; I'll put my lime in when I first mix up the heap." It is our turn now to say "Stop, sir, stop."—We want, before you go to work, to tell you that the great object is to neutralize (or counteract, or fix or destroy) *the acid in the muck*. The more ammonia you can extract or set free from the dung *at once*, the more effectually you will do your work. Now lime applied to dung, *in its green state*, will not help to throw out ammonia half as fast as if the dung be *considerably decomposed* before the lime is used. If, then, you save the labor in the way proposed, you fail to get that large quantity of ammonia, at one time, which, if produced, would work like leaven through every lump and particle of muck in the heap, and neutralize the acid.

"Well, then, Mr. Editor," you say, "I'll save labor by letting the dung get *considerably decomposed* before I go to work upon it, and then will put in both muck and lime at once." Do so, sir, if you please; but if you do, the winds will have carried much of your ammonia to Maine or to Georgia, before you begin to use it; and therefore the quantity of muck which your dung will change into manure is very materially lessened.

Let the dung, while green, be mixed with muck, because the ammonia which passes off in its first stages of decomposition, will then be saved and used. But do not put your lime in for several weeks, because its action upon dung that has undergone considerable change, throws off ammonia much faster than from fresh dung. The faster the ammonia is generated or set free at any one time, the more thoroughly it will penetrate the muck.

The principal use of the lime in this process is, to generate ammonia rapidly from the dung. This ammonia is the strong smelling effluvia or gas, that goes off from the fermented dung heap. The same substance is sometimes called *harts-*

horn, and is used in ladies' smelling bottles. The great object is to generate or liberate *this* under such circumstances that it shall pass into muck and counteract its aid.

But does not lime itself, when put into the muck heap without dung, neutralize the acid? It does, as far as it comes in contact with the muck. Why not then use muck and lime alone, or muck and ashes alone, without putting in dung? Because in such cases, the lime and ashes act but little on any other parts of the muck than those which *touch* the lime or ashes. There is no steam—no gas—to penetrate the lumps and do the work thoroughly. But put in the dung—raise the *steam*—and the steam, if properly confined by the outside coating of the heap, will penetrate every lump and particle, and make the whole good for nourishing plants.

Urine will answer the same purposes of dung in this process of neutralizing acid. Ashes will answer in the place of lime. Loam may be substituted for muck, but is far less valuable.

Again we urge it upon farmers to consider this subject well; for we are satisfied that *the best manner of preparing muck* for use on our lands, is one of the most important practical questions now agitated by our agriculturists.

We will dismount now; but it will not probably be long before we shall bestride our hobby again.

#### ON THE FAILURE OF NITRATE OF SODA AS MANURE.

From the London Farmers' Magazine.

Sir,—Being a constant reader of your excellent publication the "Farmers Magazine," and referring to a letter from David Barclay, Esq., in number 5 for November of this year, I cannot but express my surprise and disappointment, that with so many very clever and well-informed agriculturists in the Rape of Arundel, no one has stated to you the general failure and great loss sustained by the use of nitrate of soda on wheat last spring, in a district extending from the river Arun west, to the Adur east, and from the sea-coast south to the Weald of Sussex north, comprising every sort of soil, management, and situation.

I am a very bad hand with my pen, and shall therefore content myself with stating that the few instances of success form the exception to the general rule of failure.

Hoping, if you insert this letter in your next number, it may excite some more efficient person to address you on the probable causes of the failure I have referred to, I am, sir, your obedient servant,  
IGNORAMUS.

Arundel, Sussex, December 19th, 1840.

#### SEVENTH AGRICULTURAL MEETING.

[Feb. 25.—Mr. King in the chair.]

The secretary announced the subject of discussion—Soils and Manures.

Mr. Teschemacher, Superintendent of the Botanic Garden and Conservatory, in Boston, presented three pots of geraniums, one of which had

been grown in the natural method, two by an artificial process. Mr. T. stated that he had recently read Liebig's work on organic chemistry, as connected with agriculture, and considered it a valuable contribution to science. Liebig stood very high in his profession as a chemist; and presented views in relation to soils and manures, quite different from those which are usually entertained. Liebig supposes that plants, by decomposing the air, receive a considerable proportion of their nourishment from the atmosphere. The plants which he presented to the meeting, he called his Liebigites, because they were grown under the application of Liebig's principles, though this was undertaken before Liebig's work had been seen. The geranium grown in the common way presented a leaf four inches across. The geranium grown by the artificial process, was from seed sown last September, and was potted last December, and the leaf of it now was six and one half inches broad. This was a remarkable growth. He supposes the effect may be as great in the flowers as in the foliage. If he is successful in producing flowers corresponding with the size of the leaves, he will acquaint the public with the process which he has adopted. The subject has a direct bearing upon agriculture. What affects one species of plants, will be as likely to affect others. In this case there was no poudrette used; and he considered the result remarkable and encouraging.

Dr. C. T. Jackson inquired whether these principles are peculiar to Liebig; or are they well known, and such as have been published in other works. He thinks Liebig's discoveries not original. The existence of ammonia in rain water is not a new discovery. There was no doubt it might always be found in rain water falling in the vicinity of cities; in such a situation Liebig discovered it. Mr. Hayes, of Roxbury, discovered it in the rain water in Vermont.

Mr. Teschemacher inquired whether the discovery had ever been made known before it was made known by Liebig. It does not appear that it has been.

Dr. Jackson then proceeded, agreeably to appointment, to speak of *Soils and Manures*.

He stated that he had had little leisure to prepare himself for the evening; and he must draw upon his recollection for facts. He has devoted many years to agricultural chemistry, with a view to the advancement of agricultural science. He wishes particularly to present some important rules in the management of composts.

His first remarks would have relation to soils. All soils originate from the crumbling and disintegration of rocks. Under the influence of air, water, frost, and mineral substances in the rocks, the hardest of them will be reduced to powder. Soils vary according to the different characters of the rocks from which they are derived. This is distinctly shown in nature; and it will be found that groups of plants are peculiar to certain soils. Simple soils consist mainly of one mineral substance; compound soils of several united. Alluvial soils which are formed by the flowing of water, by which various matters are taken up and deposited together, are of course compound soils, as they embrace a variety of elements. Diluvial soils are found in those parts of the country where there are evident traces of a rush or flood of wa-

ter pouring from the north, by which large rocks were hurried onwards and various soils commingled. Soils embrace a variety of mineral elements; such as siliceous or flint, alumina or clay, lime, magnesia, oxide of iron, oxide of manganese, potash, and soda. These are important to constitute a soil. Siliceous serves to open the soil; alumina, or clay, if found alone, constitutes too tenacious and close a soil. Soils composed almost entirely of lime are too porous, and suffer the rain too soon to pass through them.

A soil must contain at least three earths: siliceous, alumina, and lime; and, besides these, other elements must be found in soils in order to the production of certain plants. Soda and potash are required in the soil for the production of particular plants. Plants must find the element necessary to these plants, in the soil, or they will not flourish. Clover contains gypsum or the sulphate of lime. Gypsum, therefore, must be found in the soil in which we expect clover to flourish. The seeds of all the cereal grains contain phosphoric acid, united with lime and magnesia, and this acid is very rarely found in the soil in a free state. When free, this acid is pernicious. A soil which is acid cannot be fertile. It is rarely fertile when exclusively alkaline. The acids and the alkalies should be in proper proportions. Soda and oxide of iron likewise, when united with acids, form bases. Mineral constituents may vary much; but certain other substances, such as saline and organic matters, cannot vary much without affecting the fertility of the soil. Many substances in the soil are derived from the decay of organic substances. The first plants on the earth, it is supposed, drew their nutriment from the atmosphere. These were a very hardy kind of plants, which could almost live on mineral aliments. Carbon is taken up and oxygen eliminated. Brongniart supposes that the atmosphere in the beginning was more highly charged with carbonic acid than now. Plants served to prepare the air for the respiration of human beings. Plants draw carbonic acid from the air. The air contains one ten thousandth part of carbonic acid. Saussure found that this proportion did not vary in the air on the summit of Mount Blanc. Gay Lussac, who ascended in a balloon higher than any one before, and at twenty-five thousand feet obtained air, found, upon analysis, that this air contained as much carbonic acid as that near the ground. Carbonic acid is every where equally mingled with the atmosphere. If two jars are taken with hydrogen gas in one, and carbonic gas in the other, the latter placed undermost, the two gases will mingle, though a bladder should be placed between them; half carbonic acid will be found above, and half below; the one gas will be intermixed with the other, contrary to the specific gravity of the two gases. The atmosphere is composed of four-fifths nitrogen and one-fifth oxygen. They are not chemically combined but mechanically united. Were a chemical union to take place, it would become nitric acid, and we should be deluged in aquafortis. Hydrogen and oxygen gases when poured into the same receiver, are said to be mechanically united, but when the electric spark is introduced and water is formed, they are chemically combined, and a complete union is effected.

Organic matters from the decay of plants form  
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mould. Plants will not grow upon a mixture of mere earths; or rather will not perfect their seeds without organic matters. [The Dr. here entered into some remarks upon what he deemed erroneous views in Liebig's theory of vegetation and the operation of manures; but as these will presently be given to the public under the Dr's. own hand in his forth-coming reports, where he can state them fully, and backed by what he deems conclusive evidence and authorities, we omit this part of our report. *Reporter.*]

Vegetable matters decaying on the surface produce vegetable mould. He, Dr. J., prefers to retain this name. This mould is highly charged with carbonic acid and contains many acids. Vegetable matters in their decay produce acid. A fallen tree in a state of decay destroys vegetation in its vicinity. Plants will not grow round decaying logs. It is difficult to induce farmers to use peat, because they say it will produce only sour crops. The acids produced by the decay of vegetable matters are numerous. Vegetable mould is not a simple substance. Some chemists have given it the name of humus, ulmin, ulmic acid. Berzelius has examined this substance, and found it possessed of various properties. He called it geine or apothme in his work published some years ago, but has now abandoned these designations. These names have since been adopted by chemists in this country. So far from being a simple substance many substances are included in it. In a late work Berzelius says there is no such thing as geine, considered as a simple or elementary substance. Within the last three years he, Dr. J., has found the various substances to which Berzelius refers as existing in it. By his own independent examination he (Dr. J.) has discovered them. Berzelius in a work in German received within a few days has described them; and they correspond with his (Dr. J's.) discoveries. In respect to some of them he has anticipated the discoveries of Berzelius.

There are ten distinct matters found in this substance called geine, which substances he exhibited at the meeting. The substance called geine contains the crenic and apocrenic acid. The acid forms an insoluble substance with lime. The crenic acid derives its name from *Krene*, the Greek word for fountain, as Berzelius first discovered it in the waters of a well in Sweden. This acid is yellow, semi-transparent, soluble in water and alcohol; and forming soluble combinations with alkalies. Apocrenic acid was found as the crenic was found. He (Dr. J.) has found these two substances in soils and peats in Maine, Rhode Island, and New Hampshire. Berzelius has not yet discovered them in peat, but presumes their existence in it. Humic acid is distinguished by forming a gray precipitate with the subacetate of lead. Crenic acid contains much less nitrogen than the apocrenic acid. Humic acid contains nitrogen. The apocrenic acid is the only one which forms insoluble salts with lime. The crenic acid forms soluble compounds, and exists in the subsoil as the crenate of lime.

From black, brownish soils, the humic extract was obtained by Berzelius. In some cases, *glairin* is found. All these substances form soluble salts with lime. These acids form soluble salts with lime. These salts are decomposed in the process of vegetation. Bog-iron contains apocre-

nic acid. What Berzelius now calls humic acid, and extract of humus, have no relation to substances formerly known as such. They are to be considered as new names for new matters. Apocrenic acid is found in bog-manganese; peat contains large quantities. Humic acid in peat is precipitated by the subacetate of lead, as the doctor ascertained three years ago. This is exactly the matter described by Berzelius. Peat contains apocrenic acid, and humic acid. Peat thrown on the soil produces sour grasses. It is necessary to neutralize peat by alkalis, and thus to saturate the acids, in order to make them useful. The soils from the farms at Winnipiseogee lake, which have produced more than one hundred and thirty bushels of corn to the acre, are full of vegetable matters. These soils abound in the above-mentioned organic matters. He would make another remark in relation to the doctrines of Liebig, and to illustrate, likewise, his former position in reference to the filtration of manures. In the copper mines of Chessy, in France, some beautiful stalactites are found, of a green color, and a foot in length, containing the crenate of copper. These could have had no origin except by filtration from the top-soil. They have fifteen per cent. of crenic acid. These stalactites, therefore, contain organic matters.

The farmer, with a view of testing the truth of any principle, should take care to make experiments with exactness, otherwise, he will do no justice to the principle itself, and can never arrive at certain conclusions. He may compound his peat with night-soil, and leave it over the winter. In the spring it may be dug over and mixed with lime. It is said often, that lime is of no use. If applied after it has been air slaked, or without being slaked in the form of carbonate, its use will not be perceptible; but applied immediately on being slaked, the manure will be completely decomposed. In the process of decomposition, it will give off large quantities of ammoniacal gas. The heap being covered with mould, will absorb the ammonia. Potash has the same action as lime, on putrid animal substances. Ashes operate as lime operates, but not with as great strength. Alkalies are found under various forms; solid, gaseous, and liquid. Vegetable manures abound in acids, and require to be compounded with alkalies. Animal manures are most powerful in producing ammonia. Ammonia exists in the atmosphere in cities and their vicinity. The quantity in the air is minute, but great quantities are given off in burning coal. If you mix soot with potash, or the hydrate of lime, you will find ammonia. In order to ascertain whether ammonia exists universally in rain water, we must procure this water from the interior. Liebig made his inquiries in the neighborhood of the city of Geissen. Mr. Hayes has found it in the waters of Vermont. Ammonia is valuable as a solvent, but he (D. J.) does not know that it enters into the composition of plants.

Dr. Jackson then kindly replied to many inquiries which were made to him. He was of opinion that the reason why the application of lime had failed in many cases, was, that the limes applied were of a magnesian character. He said likewise, that lime applied in the form of a carbonate must not be expected to produce its effects until the second year, when the soil becomes sa-

turated with carbonic, and other acids, and no longer prevents the plants from obtaining their needed supply.

Mr. Newton, of Pittsfield, President of the Berkshire Agricultural Society, said that this last effect corresponded with his own experience; that while in the liberal application of lime to a field, he saw no effect the first year, the second year the crop of grass in that field was most abundant. Precisely the reverse was the case with ashes on an adjoining lot.

Mr. Newton added that in respect to the application of the calcareous marls of Berkshire, from which so much advantage had been expected, he had applied them without realizing these beneficial effects.

Dr. Jackson farther remarked, in answer to inquiries, that in regard to the operation of gypsum, the subject was still involved in total obscurity. As to the use of common muck in compost, he considered it of equal value with peat. In regard to the mud of salt-marshes, he deemed it not so good as peat, and that it required longer time for decomposition. The salt contained in it, however, he was of opinion might be beneficial to the land. We feel that we have done and could do but imperfect justice in such a report as this, to the learned gentleman, who favored the meeting with his instructions and his patient and ready answers to the inquiries which were made. We are by no means prepared to acquiesce in all his positions; but we have endeavored to report them truly. They will call attention and provoke inquiry; this is the only road to truth; and to the inquisitive, philosophical, and practical mind, truth is the first object of pursuit, the philosopher's stone, the pearl of inestimable value.

The secretary announced that Mr. Geo. B. Emerson, of Boston would address the next meeting on the subject of trees. Much instruction, and gratification may be expected from the able and extensive inquiries of this gentleman. H. C.

#### ON PREPARING NIGHT-SOIL.

From the London Farmers' Magazine.

Sir,—I feel obliged to your correspondent, G. Brabyn, for his valuable remarks on preparing night-soil, and hope he will be so kind as to inform me through your paper, whether ammonia escapes from the dung in the yards where cattle are fed in winter, or if it remains in solution till the heat of fermentation in the dung-camps in spring disengages it. I consider it is of importance, that farmers should know if they should apply gypsum to prevent the loss of ammonia in their cattle-yards, or if it be merely necessary to do so in the dung-camps when they begin to ferment.

Would it not be proper to sprinkle the layers of dung, as they are placed in the camp, with gypsum, to make sure of retaining the ammonia?

I wish also to know from whom in London I can procure genuine gypsum in powder, as the most part of two tons which I used on clover this year was evidently plastered lime, ground down.

Your obedient servant,

Nov. 27, 1840.

J. MACKENZIE.

To the Editor of the Mark-Lane Express.

Sir,—In reply to Mr. Mackenzie's letter, published in your journal of Monday last, I beg to state that I do consider there is a considerable escape of carbonate of ammonia from farm yards where cattle are fed during winter. As putrefaction goes on so carbonate of ammonia is generated, (whilst nitrogen remains in the compound,) which is held in solution in the water present, and as the water evaporates so does the ammonia with it. Therefore we cannot apply gypsum in too early a stage of the decomposition, after which the same loss would result if water were allowed to drain from the yard without being used as manure.

All dung piles ought to have a body mixed with them having greater affinity for ammonia than carbonic acid, or else a great part of the ammonia will be lost; but if it be applied in the farm-yard, in sufficient quantity, it need not be applied afterwards.

I believe with your correspondent, that "these things are of importance," and not so much attended to as they ought, for I have seen men and horses toiling up the hills with ponderous loads of (so called) manure, when in fact very little manure existed in it, whilst they leave the most valuable manure scattered about their farm-yards and fields fermenting and dissipating in vapor, "carried away upon the wings of the wind," serving their neighbor's purpose as much as their own.

I am a great advocate for using manure as early as possible, that its decomposition takes place in the earth in the midst of vegetation, and none of its elements would be lost. Thus the death and dissolution of the present generation would spring up into life in a new one.

I am, sir, your obedient servant,  
Wadebridge, Dec. 9. GREGORY BRABYN.

#### SILK CULTURE.—IMPORTANT DISCOVERY.— THE MUSCARDINE IN AMERICA.

From the National Intelligencer.

Probably the most important information it has ever fallen to the lot of the writer of this to communicate to the public, on the subject of silk culture in this country, will be found in the present article. It has long been known to every one who has read much on the subject of the silk culture, that, by the ravages of a disease called *muscardine* in Europe, the average loss of worms, taking one year with another, amounted to from forty-five to fifty per cent. of all the worms hatched; and, what was still worse, the disease generally made its appearance after the greater portion of the expense of the rearing had been incurred. This evil has continued, from time beyond the reach of history, to within a year or two past. In the United States, all of us have heretofore considered our worms exempt from this fatal disease, it having generally been supposed not to exist here at all. This was a fatal delusion. I have just received from France a copy of the "Annales de la Société Sericicole, fondée en 1837, pour la propagation et l'amélioration de l'industrie de la soie en France," for 1837, 1838, and 1839, in one of the volumes of which I find a plate

representing silk-worms in the various stages of the *muscardine*; the first glance at which showed me that it was the identical disease of which a great portion of the silk-worms in this country have perished. All who saw the disease last summer and have seen this plate identified it instantly. I shall endeavor to have translations made for the next number of the Silk Journal, and, if possible, shall accompany them with a copy of the plate, that all may read, see, and judge for themselves. In the mean time, however, I have thought it advisable to take this hasty notice of the fact, that all silk-growers may be enabled to apply the *preventives* and *remedy*. Happily, the remedy will do no harm, either to the healthy worms or those that may be affected with other diseases, and is cheap and easily applied. The remedy is a free application of *air-slaked lime* to the worms, and also to the floors of the cocoonery, and white-washing all the wood-work of the fixtures. The lime should be sifted through a fine sieve on the worms, two or three times a week if healthy, and once a day if diseased, in the morning before the first feeding, and after cleaning the hurdles. The quantity of lime to be sifted on the worms may be just sufficient to whiten the worms and leaves well; and it should be commenced when the worms are half-grown, say twelve to fifteen days old. This remedy has, during the past two years, enabled those persons in France who used it to save and obtain cocoons from ninety-seven per cent. of all the worms hatched.

Now that we know we have this formidable disease amongst us, it becomes necessary that the remedy should be applied; and, as there are very few, if any, who know the disease by sight, I would most earnestly recommend that the remedy be applied *in all cases*, whether the worms are sickly or not; for it is even more effectual as a *preventive* than as a *remedy*, and, as before stated, will do no harm to either healthy or sickly worms.

I consider it fortunate that this invaluable information has reached me at this particular moment, just in time to be of immense service to us in this our day of ordeal. Further particulars of the disease and the remedy will be published in the forthcoming and subsequent numbers of the Silk Journal.

GIDEON B. SMITH,  
Editor of the Silk Journal, Baltimore, Md.

#### ON THE DESTRUCTION OF SNAILS IN FLOWER GARDENS.

From the Southern Agriculturist.

Mr. Editor:—One of the greatest annoyances which I have experienced in the cultivation of flowers, has been from the depredations committed by that apparently insignificant insect, the snail. The last year they were uncommonly numerous, and many a beautiful flower which the owner prized much and was perhaps anxiously watching, was laid low by these night depredators, and many a garden which but for them would have been highly attractive, looked desolate and forlorn. I do not know whether I was more unfortunate than my acquaintances, but certainly



I had apparently four times as many as I had ever had before. I did not observe the depredations until late, having been so much engaged elsewhere as not to be able to visit the garden but for a moment, and at long intervals. When I did notice them, the mischief had been done, and they were in such myriads that I despaired of getting rid of them, and yielded up the possession of the garden.

This year I fear they will be as numerous, and, of course, as destructive as ever, if I may judge from the numbers which have already made their appearance in the garden. I have looked over my books, and find that it is recommended to destroy them by sprinkling lime over the beds, (which has an unsightly appearance,) or to water the beds *late in the evenings* with lime water. I have not tried either of these remedies as yet, but I have watered the beds with soap-suds, which is highly destructive to insects. What number there may have been, of killed and wounded, I know not, but certainly on those beds they are as numerous now as on those which were not so treated. Another method which is recommended, and which I have tried with success, is to scatter cabbage or turnip leaves, or slices of potatoes or turnips over the beds. The snails, attracted by these, of which they are exceedingly fond, (and apparently more so when they become wilted,) congregate there in great numbers, and in the mornings they will be found in quantities, which will surprise those who have not made the experiment, sheltered under the leaves, or covered with a little earth, so that they may be raked up with the hand like marbles, and what will add materially to the pleasure of the discovery, the adjacent plants will be found untouched by them. During the few warm days we had a short time since, they have come out in immense numbers, and my anemones, ranunculuses and other bulbs being just up, I feared for them. As soon therefore as I discovered that the plants were breaking the ground, I scattered a few cabbage leaves over the beds, and I will mention for the satisfaction of all florists, that up to this time, I have not discovered a single plant cut by them on those beds where the leaves have been spread. Of the quantities which I have had to contend with, some opinion may be formed, when I mention the fact that one morning I gathered a five inch flower pot heaped up, from under five moderate sized leaves, in fact some were not more than half leaves. I had not time to go over the whole garden, but left it to the gardener whose business I have made it to gather them every morning, from under these vegetable traps. I have been so delighted with my success that I could not refrain from communicating it for publication in your journal, especially as I know several fine gardens were ruined the last season by these insects. I hope my friends and your readers generally may profit by the few remarks I have made, and by following the plan, (or any better one, if there be such, and of which I will esteem it a favor to be informed,) preserve their plants to beautify and adorn their gardens.

Before I conclude I will mention a remedy I have made use of against the common red ants. During the past winter my hot bed, and especially the pots containing plants, were infested with them, and I do believe there were near a dozen

nests, in as many pots. The injury they did the plants was very great, uprooting the earth, and raising mounds in them. Several I had to re-pot, and found the bottom of the pots filled with ants and their eggs. When dislodged from one pot they took to another. After trying several remedies without effect, I watered them with soap suds, taken from the wash tub. A single watering entirely destroyed them and relieved me from this intolerable nuisance. AN AMATEUR.

Charleston, February 15th, 1841.

#### PORTRAITS AND PUFFS.

From the Kentucky Farmer.

We publish an article this week from the Farmer's Cabinet, under the above title.\* We do not pretend to endorse the criticism of the article upon the special cuts commented upon, for we have no personal knowledge of the fidelity as representations of living animals. But, however this may be, the spirit of the article is just and well timed. It would seem that a rage for *fine pictures* has seized the country; and, judging from the extraordinary efforts, in various quarters, to gratify it, the mania is likely to do the agricultural interest more harm than that which prevailed for fine animals the substantial originals of the pretended pictures. We appreciate, at a high rate, the value and utility of *faithful* engravings; but they are a positive injury and fraud, if not correct. We have seen sundry portraits of animals which we happened to know, which were highly overdrawn—represented with every possible good point and not a solitary fault. From these pictures, it might be supposed that the practical art of breeding had been brought to the *ne plus ultra* of perfection; and that no further improvement in the breeds of domestic animals could be made. We are, however, despite these beautiful representations, of quite a different opinion. Perfection is not attained at a single jump; and years and years and ages and ages more of severe practical experiment will be necessary to effect the utmost attainable degree of improvement, not only in the breeds of animals but of many if not all the processes connected with a perfect system of agriculture.

There is a class of men in the country who seem to think that the conductors of agricultural papers have nothing to do but surrender their columns for the publication of the most extravagant pictures and puffs of "this, that and t'other" breed, animal and thing. Many of these productions contain some good hints and facts; but more of them are scarcely disguised advertisements of animals, &c. for sale at great prices. The spirit of these remarks will be understood by those "whom it concerns;" we hope we shall have no more to make. If we do, we shall choose some bilious moment, when our usual good digestion and good nature are disturbed, and "cut some things into hash."

\* The piece referred to has been already published in the Farmers' Register.—ED. F. R.

## RESTRAINING SAND-DRIFT.

From the Edinburgh Quarterly Journal of Agriculture.

The most striking improvements have been effected in reclaiming sand-drifted lands upon Lord Palmerston's estate on the west coast of Ireland, between the towns of Ballyshannon and Sligo. This is an object of much general interest; and has been effected by a very simple process, introduced by Mr. John Lynch, his lordship's resident factor at Cliffohy. The tract of sand-hills upon this estate extends to many hundred acres. After unsuccessful attempts, it occurred to Mr. Lynch to conduct the process of planting bent in this way. He took up portions of bent, *Arundo arenaria*, from the numerous tusfs or patches of it with which these waste lands were interspersed, and carefully thinned out the plants into bunches of one and a half pound each, preserving the roots as carefully as possible. These bunches were put in flat or fan shaped in holes in the sand made of a rectangular form, and beaten down with the foot so firmly as a little boy could not remove them with one hand. These rectangular holes are found to be much better than round ones, inasmuch as, when the bent is inserted in thick round bunches, they are apt to rot in the holes, and the fanshape is more favorable for the bent throwing out its fibres among the sand. The plants are placed first on the side of the sandy ground next to the point from which the wind blows most prevalently, to arrest its drifting power over the rest of the ground. It may be that the drift may cover over the plants to the depth of two feet or more, in which case they will still penetrate through the sand; but it would be advisable to plant anew on the drifted surface until a fixed surface be established. The plants are put in at 2½ or 3 feet asunder. When Mr. Lynch undertook the planting, part of the ground had been previously planted in rows of 15 feet asunder and 4 feet apart in the line, which were found to be too wide either way; and had to be beat up with new plants, which created as much trouble as the planting of the whole ground anew.

In this way about 600 acres Irish, about 860 imperial, have been reclaimed, which now only require a little attention in replanting, in such places as have missed or which begin to blow. When the transplanted bent begins to stool or spread, it effectually checks the sand-drift, and the natural grasses came up in great profusion, such as white clover, bird's-foot, trefoil, &c. So well has this simple plan succeeded, that upon a tract of the land in the neighborhood of Mulloughmore which in 1829 would not have supported a goat, now grazes 112 cattle and 200 sheep. Before these operations were commenced, the land had begun to drift across the mail-coach road, and had nearly destroyed four of the town-lands in the estate, which by these means have been saved.

Mr. Lynch, in giving some directions for the use of an estate subject to sand-drift in Prussia, observes that bent seeds ripen about the latter end of July; that the bent should not be taken up till the latter end of September, and after that any time till the beginning of April; that it grows best when planted between the months of November and March inclusive. He remarks that the process of raising bent from the seed is

tedious, as the plants will not be in a state for transplanting for three or four years. If the seeds are to be sown, it should be done in clay ground, mixed with sand from the sand-hills, and used in a greater proportion than the clay or nursery earth. He further states, that from one cut of bent he has obtained 49 bunches, with which he has planted a perch of land, and he allows about 8 tons in this way to the acre,—Irish acre we presume.

The bent should not be planted at first in the driest or blowing places, but in the more moist or firm spots. After a few years it will spread so much that, with the saving and sowing of the seeds, a stock will be afforded for extending the planting every year. This method has been followed for some time on Lord Palmerston's estate, at the rate of 200 acres per annum.

If the bent were to be sent over seas for transplanting, it is directed to be packed in moss or grass, or, if in great quantity, it may be laid in the ship's hold with wheat or barley straw between every two or three courses of the bent, and in this way it would retain its vegetative powers for four or five weeks, or longer, in proportion to the care taken in packing it.

It is well known to what extent the land has been wasted by sand-drift in the confines of the Bay of Biscay, particularly on either side of the embouchure of the Garonne. This, like a pestilence, swallowed thousands of square miles of the coast lands of France, insomuch that in the beginning of the last century it arrested the attention of government, and was ultimately stayed by one of its most eminent engineers, who, with the aid of troops of men, succeeded in planting a great belt of a particular kind of fir, *Pinus maritima major*, which has ever since checked the progress of the sand-drift, while it has clothed the sandy desert with wood highly useful for many purposes.

Lord Palmerston, impressed with the importance of this subject, has imported a considerable quantity of the cones of the *Pinus maritima major* from Bordeaux, which are now preparing in the nursery. Samples of the cones from France have also been presented to the Highland and Agricultural Society of Scotland. Even though this pine from the south of Europe may not fully answer expectations in our northern climate, it is confidently hoped that, by the patriotic exertions and example of Lord Palmerston, the extensive sand-drifts which are every where to be met with may be exchanged for grass lands or thriving wood of some sort.

The marran or sea-mat-weed, (*Arundo arenaria* L. *Ammophila arundinacea* of Host,) employed by Mr. Lynch, is the most frequent plant found in the sandy shores of England, Scotland, and Holland, and it is the best binder of sand-drift. The *Elymus arenarius* is perhaps the next best. The *Carex arenarius* the third best; and then the *Triticum junceum*, *Festuca rubra*, *Gallium verum*, and *Trifolium repens*.

## DECOMPOSITION OF BONES.

From the New England Farmer.

Mr. Putnam—Sir—On reading in your Farmer, of 17th February last, a Mr. Jones's very va-

luable experiments on bone manure, I was reminded of an idea I have often thought of, viz.: If some easy plan of decomposing bones without grinding could be adopted, so that every farmer could have the advantage of using all the bones he may collect about his own house and neighborhood, a great many bones that are now useless might be collected and become a very valuable source for manure. Now, Mr Editor, in hopes some of your intelligent correspondents will give what information they can on the subject, I will give you what I know accidentally. My wife puts all her refuse bones into her ashes, thinking they may be of some use to her soap: she makes her soap every spring, and sometimes lets her leech stand six or eight months. On removing the ashes I have found nearly all the bones decomposed, or become, in appearance, like a white jelly.

In a report of the agriculture of the house of Industry at S. Boston, published in the Farmer of May 20th, 1840, it is stated, that mixing bone manure with earth as follows, one part bone and two parts earth, laid in a heap and moistened with cow-yard wash or water, and turned over often, the bones will become completely decomposed in about two months.

A MECHANIC.

#### SOOT AS MANURE.

From the Farmers' Journal.

Sir Humphrey Davy characterizes soot as "a powerful manure, possessing ammoniacal salt, empyreumatic oil, and charcoal, which is capable of being rendered soluble by the action of oxygen, or pure vital air; all which component parts rank high as nutritious or stimulant manures." On meadows (says an agriculturist) I have used soot with great advantage in substance, and, though sown by the hand, one dressing gave me always heavy crops of hay for two successive seasons; but this is a wasteful mode of applying it, a great proportion of its ammonia, one of its most active ingredients, being volatilized and dissipated in the atmosphere. When dissolved in water there is no waste; it is all available; and, for horticultural purposes, I have mostly used it in that state, mixing it up in the proportion of about six quarts of soot to a hoghead of water. Asparagus, peas, and a variety of other vegetables, I have manured with it, with as much effect as if I had used solid dung; but to plants in pots, particularly pines, I have found it admirably well adapted; when watered with it, they assume a deep healthy green and grow strong and luxuriant. I generally use it and clean water alternately, and always over head in summer; but, except for the purpose of cleansing, it might be used constantly with advantage.

#### ADVANTAGE OF PLANTING FRUIT TREES ON DECLIVITIES.

From the Farmers' Journal.

Dodart first observed that trees pushed their branches in a direction parallel to the surface of the earth. If a tree stands on a steep it pushes

both towards the hill and towards the declivity; but on both sides it still preserves its branches parallel to the surface. As there is an attraction between the upper surface of leaves and light, I am also persuaded, though not equally certain of it from experiment, that there is an attraction of the same nature between the under surface of leaves and the surface of the earth. This I consider the true cause of the phenomenon;—I had long observed that the most fruitful orchards and most fertile trees are those planted on a declivity, and the steeper it is, though not quite a precipice, the more fertile they prove. It is well known that the spreading of trees always renders them fruitful. On a plain they incline to shoot upwards; and therefore art is employed by skilful gardeners, and applied in various ways, to check their perpendicular, and to promote their lateral growth. But this point is obtained on a declivity by nature. There a tree loses its tendency to shoot upwards, and in order to preserve its branches parallel with the surface, is constrained to put them in a lateral direction. Hence an important rule in the choice of orchards and fruit gardens.

D. J. WALKER.

#### DOGS\*.

From the Edinburgh Quarterly Journal of Agriculture.

We are glad that the interesting subject of the natural history of dogs has been taken up by an individual so well qualified to handle it as Colonel Hamilton Smith. There is scarcely any other naturalist in Britain who has devoted so much attention to certain tribes of quadrupeds, particularly those more directly subservient to the interests of the human race. During his travels in many different quarters of the globe, he has availed himself of every opportunity of collecting information, and making drawings of rare species, whether found in a state of nature or preserved in museums. The collection of zoological drawings thus accumulated, is, we believe, one of the most extensive in the country; and the portion of them relating to the Canidæ (the dog and its allied species) has afforded the materials for the present volumes.

Colonel H. Smith enters at some length into the discussion of the difficult question relating to the origin of our domestic dogs; and comes to a somewhat different conclusion from many recent writers on the subject. It is well known that very different opinions have long been held by naturalists on this point. Linnæus included the whole of the domesticated kinds under the name of *Canis familiaris*; Buffon viewed the shepherd's dog as the original species from which all the others had sprung; Cuvier, in his *Règne Animal*, regards the species as distinct, remarking, at the same time, that the "taming of the dog is the most complete, the most useful, and the most singular conquest man has achieved, the whole species having become our property." A wild dog, named the Buansu (*Canis primævus*), inhabiting the central region of the old world, whence many of our most ancient elements of

\* Natural History of Dogs. By Lt. Col. Charles Hamilton Smith; forming the 25th and 26th vols. of the Naturalist's Library.

social existence seem to have emanated, has been pointed out as the primitive species of the whole canine race. A jackal (*Canis Anthus*, F. Cuv.) is shown by Professor Kretschmer to resemble so closely the antique carved and painted figures in the Egyptian temples, and a skull taken from the catacombs of Lycopolis, that there scarcely can be any doubt but that it is the type of the dogs of ancient Egypt. Mr. Bell, in his recent work on British Quadrupeds, advocates the claims of the wolf to be considered the progenitor of our domesticated races; and there are other modern writers who concur with him in this opinion. Colonel Hamilton Smith adduces numerous considerations in opposition to this view, and concludes by affirming his belief, that "There are sufficient data to doubt the opinion that the different races of domestic dogs are all sprung from one species, and, still more, that the wolf (*Canis lupus*) was the sole parent in question; on the contrary, we are inclined to lean, for the present, to the conjecture that several species, *aborigine*, constructed with faculties to intermix, including the wolf, the buanu, the anthus, the dingo, and the jackal, were parents of domestic dogs. That even the dhole or a thous may have been progenitors of the grayhound races; and that a lost, or undiscovered species, allied to *Canis tricolor* or *Hyæna venatica* of Burchell was the source of the short-muzzled and strong-jawed races of primitive mastiffs."—Vol. i. p. 104.

After considering the general structure of the canine family (co-extensive with the Linnæan genus *Canis*), which is an extremely natural one, the osteology and whole anatomy of the species being surprisingly similar, the author first describes and figures the wolves, regarding which he supplies much accurate and interesting information. Lyciscan dogs (Gen. *Lyciscus*), including the Prairietwolf of North America (*L. latrans*), and the Caygotte of Mexico (*L. cagottis*), as well as the red dogs (*Chryseus*), next pass under our review. The latter group comprehends the dholes, the Pariah dog, and the New Holland dingo. The dingo occurs in a wild state all over Australia, but an inferior breed is partially tamed and occasionally used for hunting kangaroos and emus. These canines are entirely mute, neither howling, barking, nor growling. They do not run like dogs, but carry the head high, the ears erect and turned forward; and we are assured by Cunningham, that whenever domestic dogs fall into their power, they are immediately devoured. It has been usual to consider this and other diurnal canines similarly circumstanced, as feral dogs (*chien maron* of the French,) that is, dogs returned to a wild state after they or their progenitors had been domesticated. Col. Hamilton Smith is inclined to regard them as in their aboriginal condition, since they indicate no tendency to assume the distinctions to which, if they were descended from wolves or jackals, they must have returned.

After alluding to the various names by which jackals are domesticated in the east, the author gives the following account of their manners:—"They form a group of crepuscular and nocturnal canines, never voluntarily abroad before dusk, and then hunting for prey during the whole night; entering the streets of towns to seek for offals; robbing the hen-roosts, entering out-houses, ex-

amining doors and windows, feasting upon all dressed vegetables and ill-secured provisions, devouring all the carrion they find exposed, and digging their way into sepulchres that are not carefully protected against their activity and voraciousness; and, in the fruit season, in common with foxes, seeking the vineyards, and fattening upon grapes. They congregate in great numbers, sometimes as many as 200 being found together; and they howl so incessantly that the annoyance of their voices is the theme of numerous apologies and tales in the literature of Asia. Their cry is a melancholy sound, beginning the instant the sun sets, and never ceasing till after it has risen. The voice is uttered and responded to by all within hearing, in a concert of every possible tone, from a short hungry yelp to a prolonged crescendo cry, rising octavo above octavo in the shrillness, and mingled with dismal whinings, as of a human, being in distress. Jackals retire to woody jungles and rocky situations, or skulk about solitary gardens, hide themselves in ruins, or burrow in large communities. If by chance one of the troop be attacked, all are on the watch, and, if practicable with self-preservation, issue forth to the rescue. The Indian wolf and hyæna occasionally avail themselves of their burrows, but while they occupy these retreats, they abstain from hostility with their neighbors. In the Moslem dominions they remain entirely unmolested, but in British India they are occasionally coursed with grayhounds, or hunted with fox-hounds, and having a strong scent, are readily run down, unless they can regain their earths, or mislead them in the jungles. Nevertheless, when at bay, the jackal fights so desperately, and his snap is so severe, that it is usual to have them destroyed by terriers. They unite the cunning of foxes, and the energy and combination distinguished in the best trained dogs, with a tenacity of purpose surpassing both. When overpowered by superior force, and resistance is vain, they affect to be slain, and be simulating death; but if they be thrown into the water while in this state, they swim immediately. They emit a very offensive smell, not totally obliterated even in a domestic state, when they have been fed for a considerable period on rice plantations, and other vegetables, as is usually the practice with the native Indians. Although, when in captivity, they know and will follow their master, they are far from being tractable, or to be depended upon. They associate readily with dogs, and hybrid offspring is not uncommon; nor is there a question that their mules are not again prolific."—Vol. i. p. 210, 212.

It was long a mistaken notion that the jackal was in the habit of preceding the lion or tiger, and by means of its superior powers of smell indicating the spot where prey was to be obtained. Had such been the fact, it would have formed a singular exception to the general rule, for nature appears to have implanted an innate hostility between the canine and feline tribes, which prevents them ever standing, while in a state of nature, in such friendly relations to each other. The truth is, that the jackal does not precede, but follows at a safe distance, evincing his hostility by continually pursuing lions and tigers during the night, and announcing their approach by a peculiar cry of warning, to which no other animal is heard to respond; while at other times, the cry of one is

answered in every direction, by all the individuals within hearing.

The greater part of the second volume of Colonel Smith's work is devoted to the dogs, properly so called, and contains an interesting history of all the more important breeds, including all the kinds with which we are so familiar. He likewise enters at some length into the consideration of the breeds as known to the ancients, a subject of somewhat difficult investigation, but full of interest, both as illustrating the changes which the various races have undergone, and as throwing light on many passages in the Greek and Roman classics.

As a specimen of this portion of the work, we subjoin the following extracts. "Of all carnivorous quadrupeds, dogs possess the greatest variety of modulations in their voices;\* they bark, bay, howl, yelp, whine, cry, growl, and snarl, according to the emotions they feel. When encouraging each other in hunting, expressing the language of authority; in watchfulness, at distant noises, or displeasure at particular sounds, in pain or suffering, they have an expressive moan; a guttural or tremulous squeal, under impatience; a snarl, in anger; and a kind of shriek, when their passions are excited to ferocity. Who is there so little observant as not to know, almost by the sound of the first note, the peculiar bark of the drover and shepherd's dog, half intonated as the expression of delegated authority, and understood by the flock or the drove, the more earnest repetition when the first signal is disregarded, followed by the low and bluff sound, conveying a menace, and at length the sharp snarl, when he finds it necessary to enforce obedience, by running to the spot, and execute his orders with well-counterfeited anger; or, if disappointed, the half howling bay of lamentation at the failure? All these emotions are expressed in a language which marks the singular endowments bestowed by the Creator's fiat, for purposes that cannot well be mistaken, nor be studied without calling on our sympathy and affection. Dogs, likewise, express most significantly, by the voice, their desire to be admitted within doors, and still more in begging with perseverance; or, in resentment, when treated with contempt. They are jealous of their master's favor, quick in discovering the respectable, insolent to the poor, selfish in gormandising, tyrannical among their meaner inferiors, and fawning upon their superiors; injury they resent with the discretion and pertinacity of politicians."—Vol. ii. p. 83.

The sagacity of the canine species, their benevolent feelings, prescience of impending danger, instinctive comprehension of the nature of property, fidelity, &c. the author illustrates by numerous striking anecdotes, several of which had not before fallen under our observation. For these, we must refer to the volume itself. Under the head of "Pointer," we find the following remarks:—"In their present qualities of standing fixed and pointing to game, we see the result of a

long course of severe training; and it is a curious fact, that, by a succession of generations having been constantly educated for this purpose, it has become almost innate, and young dogs of the true breed point with scarcely any instruction. This habit is so firm in some, that the late Mr. Gilpin is reported to have painted a brace of pointers while in the act, and that they stood an hour and a quarter without moving. These dogs were named Pluto and Juno, and were the property of Col. Thornton. Dash, another pointer belonging to the same sportsman, was sold for £160 worth of Burgundy and Champagne, one hoghead of claret, an elegant gun, and a pointer, with the proviso that if an accident should disable the dog, it was to be returned to the Colonel at the price of £50!"

#### ON A PRINCIPLE OF FENCING,

*Formed according to the laws of vegetable physiology.*

From the (London) Farmers' Magazine.

At a recent meeting of the Botanical Society of London, the following account was given by Mr. Daniel Cooper, the curator, of a mode of forming a fencework to plantations, &c., of a very economical and rustic kind, and which may be termed with all propriety a "natural living fence." We are induced to give a full abstract of the communication, (from the first part of the society's proceedings,) as we think the suggestion might offer some points of interest to our country readers.

The natural living fence consists simply of planting for the purpose trees or shoots of the same species, or species of the same genus, or genera of the same natural family, and causing them to unite by means of the process of "*grafting by approach or inarching*," a process well understood by gardeners and horticulturists. The fact having been briefly stated, it is necessary, in the next place, to enter more fully into an explanation of the plan to be adopted. In the first instance it is requisite to cultivate a portion of land, for the purpose of rearing the shoots intended for forming the fence. Those which I had the opportunity of observing (on the estate of Sir Thomas Neaves, Dagnam Park, Essex, constructed by his gardener and planter Mr. Breese) were formed of ash, but of course any other tree would similarly unite and answer the end required. The faster the tree grows, and produces new wood, the stronger and better the fence necessarily becomes. The shoots or small trees are run up (as termed by gardeners), and kept trimmed so as to produce stems as straight as possible. These are trained to the heights required, depending upon the intended height of the fence. As soon as they have acquired sufficient age they are carefully transplanted, a trench of two feet in width being previously made in the line of the intended fence, it being found necessary to surround the roots with earth of a richer nature than that usually met with, where fences are to be placed, such as the outskirts of wood, plantations, parks, &c. The trench having been made and prepared, the stems are then carefully removed; one set being

\* As a singular proof of this, we may mention the singular case communicated to the French Academy of Sciences, by the celebrated Leibnitz, of a dog that had been taught to modulate his voice, so as to be able to repeat intelligibly the words required to ask for coffee, tea, and chocolate!

planted at the required distance, a foot for instance from each other, those we may suppose to slope to the north; the other set, for example, are planted sloping towards the south, at the same distance from the other, so that when the shoots proceed from the ground, they are in contact by their internal part.

The several stems having been thus arranged, the next and most important step is that of causing them to unite; this of course is requisite in order to produce strength, and is accomplished by the process of *grafting by approach*, or, what is the same thing, that of *inarching*. For this purpose it is necessary to remove a small plate of bark at the proper season, on each stem where their inner portions are in contact; this having been carefully performed, approximate the two stems, so that the denuded portions of each shall exactly meet; tie the stems together at these places, and keep them for a short time from the action of the atmosphere by means of a piece of clay. In the course of a few weeks, if these precautions have been attended to, adhesion takes place, and the result is, that a natural living fence has been formed, having openings of a diamond shape, which may be made of course of any size that may be required; it being only requisite to place the stems in the earth at a greater or less distance from each other.

The adhesion takes place in the following manner according to the laws of vegetable physiology. The plates of bark being removed on each stem, and the stems approximated to each other at that part, it follows that as the fluids rise in the stems of exogenous (outgrowing) trees, within the wood portion of the trunk and descend within the bark—that the stems being closely tied to each other, and kept at their point of union from the action of the air, the *cambium* (proper or elaborate juice) exudes, forms new wood, and the stems unite by the natural process.

The advantages which Mr. Cooper considers this kind of fencing to possess over that in ordinary use, are the following:—

1st. That it is rustic, and has not the hard and stiff appearance of the fencing made by carpenters.

2d. That so long as the trees of which it is formed are alive, it never requires to be in any way repaired, as living wood resists the action of the weather. The young shoots, should any spring forth, are to be removed by the pruning knife.

3d. That it may be carried to any height without additional expense, by training or running up the stems to the required height.

4th. That it acquires strength and thickness by the deposition of new wood annually; so that in the course of years, when the stems have acquired the greatest degree of thickness, and have obliterated the openings, in the first instance made, a complete solid living wall will be the result.

5th. That owing to the well-known durability and power of resisting the action of the weather on the bark, and external portions of living trees, a fence made on this plan does not require to be covered with tar, or any other preparations, requiring much time, labor, expense, and annoyance in the operation.

6th. That the first expense is the last, and is much cheaper also, in the first instance, than the ordinary kind of fencing employed, not requiring

an annual expenditure to keep it in order; living wood, as before observed, withstanding the effects of the weather to a much greater extent than dead wood.

7th. That a fence to orchards may be formed of fruit trees of the same genus, or in the same natural family; the lower portions or stem of which form the fence, (and may be carried, as before observed, to the requisite height), whilst the upper part may be allowed to send forth its shoots and bear fruit.

8th. That owing to the open nature of this kind of fence (which openings may be formed of any size), shrubs and other plants usually planted close up to fencework, for the purpose of concealing it, will receive a larger proportion of air and light, so necessary to the growth of vegetables, which cannot be the case with the ordinary method of enclosing parks, &c., with palings.

9th. That should one of the bars by any cause become dead or destroyed, the circulation is carried on by the continuous bar or stems; so that if a bar dies it still remains in its situation, although it does not increase in thickness as takes place in those around it; this dead bar may then be compared as to durability, to the fencing until the present time formed of dead wood. From the well-known nature and structure of wood, I consider the application of the process of *grafting by approach*, or *inarching*, in the construction of fences of all descriptions, to be one of the leading improvements of late years made in the science of gardening: and as such should strongly recommend its adoption to those individuals possessing landed property, and also to the directors of railroads and other undertakings, where both man and cattle are intended to be kept off, and which might more effectually be accomplished by the judicious selection of stems armed with prickles, &c.

#### COMMENTS ON THE ARTICLES OF THE EDITOR ON THE EFFECTS OF GREEN-SAND AS MANURE.\* [AT PP. 679, 680, VOL. VIII., AND P. 118, VOL. IX.]

To the Editor of the Farmers' Register.

Your last number of the Register, has "played the wild" with us Pamunkey farmers, or rather would-be farmers. Some short time since, you analyzed all of our marls, and told us they contained no lime, or so little as almost to be useless.

\* With this communication, there was received a box of specimens of green-sand marl, sent at our request, by Dr. Braxton, in consequence of the very strange result of the analysis of the specimen of marl, supposed to be that which he used (from G. W. Bassett's land,) and which we found to contain but 11 per cent. of carbonate of lime. This result was reported, (at pages 683, 689, vol. 8,) with Dr. Braxton's answers to our queries; but at the same time, we intimated the strong suspicion that a wrong specimen had been sent us by mistake. We therefore asked for more specimens, and also, that Dr. Braxton would himself analyze the marl in regard to which a mistake was suspected. He has complied with both requests,

We then consoled ourselves, that what they lacked in lime, they made up in green-sand, or may be, the happy compound of lime, green-sand, &c., whatever it may be, formed a happy dose for our sandy bottoms, or flats. But you now come out and tell us, that the green-sand is worse than useless. Now, my dear sir, what are we to do? Our lands dreadfully poor, no lime, (which is the only thing, as you say, that can benefit them,) and our green-sand, of which there is plenty, you say is good for nothing.\* I

and the results show that there was a mistake in the former specimen, and that the marl which he has used is about four times as rich in calcareous matter as the specimen which we before analyzed. He analyzed by solution in acid, filtration, and subtraction of the undissolved residuum from the whole quantity—which mode will always make marl appear richer than it really is. We used Davy's apparatus (for the measurement of the gas evolved,) which is much more accurate. The results were as follow:

Bassett's marl, used by Dr. Braxton, and by his analysis, contained of carbonate of lime, 48 per cent.  
The same, according to Davy's apparatus, - - - 45.50.

The lower stratum, of the Newcastle green-sand marl, (formerly reported by us, p. 688 vol. 8, as containing 2 per cent,) by Dr. Braxton's trial contained, - - - 5.

And by Davy's apparatus, - - - 2.50.

This stratum, it should be remembered, is the lower, and the one lying above it, 5 feet thick, contains 36 per cent. of carbonate of lime.

Another specimen from Bassett's land, contained only 11.50 per cent. of carbonate of lime. This, from its near agreement, was no doubt the same kind of which a specimen was before furnished by mistake, instead of the kind which Dr. Braxton used from.

All three of these specimens contained large proportions of green-sand also—estimated by the eye to be from 20 to 30 per cent. of the whole mass.—ED. F. REGISTER.

\* Not so, in either case. We reported, and correctly, the marl sent as a specimen of the kind used so largely by Dr. Braxton, to be only 11 per cent. of carbonate of lime. It now appears (as stated in the preceding note) to be rich, as we at first had supposed, containing 45.50 instead of only 11 per cent. As to the "happy compound of lime and green-sand," we readily admitted the manifest and very remarkable effects, as seen on the Pamunkey lands. We only distrusted the permanency of so much of the effect as was due to green-sand alone, from our own varied and considerable course of trial elsewhere. The results of those trials we have fully and fairly presented, (p. 118, vol. ix.) and desire others to do the like; and, so far from designing to discourage farther trials of green-sand, because of our own small returns, we have urged renewed trials, even where we had abandoned the use, in consequence of the greater benefits which we saw

very much fear that, in your "search after truth," you will leave depopulated a large section of our country; for I already hear some rumors of the return of the epidemic which prevailed in this region some years since, with such alarming mortality, both in body and purse, that I have scarcely known of an individual who was subject to the malady, that ever finally recovered. I think the physicians called it the emigrating fever. As you are our great land "regulator," you must pardon me in again asking you what we are to do? for without this marl, or some substitute, we are gone; not going, but gone, and as you say we have none that is worth using, what would you advise us to do? go to the hospital, and be inoculated for the fever, or stay a while longer, and try some more experiments with this green-sand? But from your experience, it seems the longer the trial, the worse the effects; so, Mr. Editor, I can see no glimmering of hope for us Pamunkeyites, but the very faint one, that your green-sand may not be like ours, that is, that ours may have some ingredient in it, which is wanting in yours, or, may be, our sandy lands may not labor under the same disease with your stiffer soils, and therefore the same remedy, perhaps, that may have been inert upon your lands, may be beneficial. And may not that be the reason why the green-sand acts so well as is said on the sandy soil of New Jersey, and not at all on the James river lands?†

And now, my very good friend, *badinage* apart, let us try and reason this matter a little together, and compare your ideas and experience with mine; not at all though with the view of contrasting my knowledge or experience upon the subject with yours, but simply that both sides of the subject may be presented, as far as my limited experience goes.

With the green-sand proper, I readily admit that my experiments have not been of such a character as to arrive at any thing like definite or fair conclusions; but with the green-sand marl, (the admixture of lime and green-sand,) I claim to have had some experience; and whatever may be its component parts, whether it contains much or little lime, or whatever else it may contain, certain it is, so far as I can judge, its present effects are very fine; whether it may prove a

on the Pamunkey lands. Still, there has been nothing adduced to show that we were wrong in pronouncing that the green-sand ~~one~~, without any admixture of carbonate of lime, and applied to an acid soil, would be an unprofitable application, if not entirely without effect.—ED.

† We should greatly regret such results of our investigations and reports; still, whatever may come of it, we will still aim to "search after truth," and urge all other investigators to do the same; and not to trust to our opinions, or any others, or to seek to sustain any particular theory, but submit every doubt to the test of accurate experiment. Our green-sand was no doubt generally poor; but the quantity would have made up for defect of quality. Besides, some of it was abundantly rich. Neither were the lands generally stiff, but in most cases light and sandy, though less so than the Pamunkey low-grounds.—ED.

permanent manure, time must decide. Although I think your reasoning upon calcareous manures conclusive, I would vain hope they may not be found so as respects green-sand. That is a subject as yet, I think, but little understood by farmers, geologists, or chemists, as it would seem, at least in our country. Its effects we know but little of; of its constituent character nothing. It is true, Professor Rogers tells us it is the "silicate of iron, and potash." We poor farmers are perhaps now as wise as we were before; but if the professor means to say, it is sand, iron, and potash in a state of combination, I should think that those materials would form an insoluble, semi-transparent, vitreous compound, which the oxalic, humic, and all other acids, said to be contained in the earth, would hardly decompose. But to return. I cannot agree with you, that the effect of green-sand is only that of gypsum. I think so, first, because gypsum acts only on the clover, and other broad-leaved plants, giving at first, to be sure, an impetus to some of the grains, but no increase to the crop that I could ever discover; whereas the green-sand not only produces a greater effect upon clover, but all other grasses, as I have seen a growth of hen's grass converted, by its application, into luxuriant white clover and green-sward, as well as weeds of every description quadrupled in size; and land that I am satisfied would not have produced more than 2 barrels of corn to the acre, by its application alone, now produce 4 or 5. Now in this I cannot agree, that it is the overdose of the gypseous matter that produces these effects; as I have never seen any better effects produced from any larger quantity of plaster than one bushel to the acre. Not so the green-sand; the larger the quantity I have yet applied, or seen applied, the better the effects. 2d, I have never seen gypsum have any effect in neutralizing an acid soil, whereas after the application of a sufficiency of green-sand the sorrel ceases to grow. And 3dly, I have never seen any change in the appearance of the soil itself, produced by any application of gypsum, whatever, much or little, and I have been in the habit of using it for the last 15 years pretty freely; neither have I seen any permanent improvement of the land by its use, its beneficial effects seeming, on our soils, always to have passed off with the effects of the clover, like any kind of putrescent manure on acid soils. Whereas, after the application of our green-sand, there is a manifest change in the appearance of the soil, and a continued fertility imparted thereto, as is evidenced by the growth of every thing on it, whether it be of grain, grass, or weeds.\* How long this increased fertility may continue is yet to be determined; but as "sufficient for the day is the evil thereof,"

\* We did not, in our recent articles, (p. 679, vol. viii. p. 118, vol. ix.) ascribe the effects of green-sand earth to the gypsum contained, (though that was our error, twenty years ago,) and still less did we mean that green-sand and gypsum were the same. We only maintained that the manner of action of the two was similar, though we readily admit the greater effect of the green-sand. We have found the effect of gypsum to increase with the quantity applied, from one bushel to four to the acre; but not in equal proportion.

I should recommend its continuance until its useless, or pernicious effects are more manifest than I have yet seen them. Now, in the case of my brother Carter's field at Newcastle, there was as much green-sand as green-sand marl applied, the land seemingly of equal quality, and yet there appeared to be no difference in the crop of corn; all seemed equally good, at least 100 per cent. upon what the land would have produced without it.† What may be the chemical action produced on soils, or vegetation, by the combination of lime and green-sand, I am not agricultural chemist enough to determine. But from your analysis of my marl, or rather the marl I am using, I should not suppose there was lime or green-sand enough to do much good; but still the effect, as it appears to me, has been very great on my land.‡ It may perhaps be proper that I should here remark, that the happiest effects I have witnessed from the application of green-sand, was on a piece of land that had been previously marled, with a poor marl, which to the eye had not given much indication of improvement. But as soon as the green-sand (pure) was applied, a new appearance was produced; the white clover, and patches of green-sward began every where to make their appearance. This piece of land was very light and sandy, with a gravelly subsoil, and not capable, before it was improved, I should suppose, of producing more than 2 to 2½ barrels of corn to the acre. Last year it was in corn, and produced at least 8 or 9 barrels, (my overseer says 10) the adjoining land, in another field of originally similar soil, did not produce 1½ barrels to the acre. In the absence of all chemical knowledge on the subject of green-sand, (as I consider we know nothing of it analytically, and as the eye, and its effects, are all we have to direct us in its use,) I must think the deposit from which Mr. Williams Carter made his experiment is not of the same character as what we call green-sand lower down the river; as in his, if I recollect aright, there are no shells at all, whether of a large or small kind, whereas, in the deposits found lower down the river, and above too, for aught I know, there are always more or less of small shells, and interspersed occasionally are found larger ones, of a peculiar character, as well as the saddle oyster shell; neither of which shells have I ever seen or heard of, except in connexion with green-sand. And neither have I ever seen the green-sand where these peculiar shells did not more or less obtain. And if your gypseous earth is like the banks I have noticed at City Point, (with entire deference to your better knowledge, and more ac-

† The great improvement on Mr. Carter Braxton's land, from the use of green-sand earth containing only 2 or 2½ per cent. of carbonate of lime, and the apparently equal and similar effect with the upper stratum containing 26 per cent. of carbonate of lime, we confess to be to us astonishing and inexplicable. But still the facts do not yet contradict our views; though they will do so, should the effects of the lower stratum be found to be permanent.

‡ This was written while supposing the marl to be as poor as 11 per cent. The force of the objection is removed by the subsequent analysis, showing 45.50 to be the degree of strength, in carbonate of lime.



curate and scientific investigations of these deposits,) I must think your gypseous earth is still more variant from our green-sand, than Mr. Carter's. Again—Prof. Rogers in his report particularly guards us against taking any thing for green-sand which has no shelly matter in it, and moreover I think says the green-sand has never been found in this country when the saddle oyster shell was not present.\* Now I am rather confident I

\* We readily admit the general inferiority of the green-sand earth with which we experimented. And it was so, not because there was not plenty of richer, but because we first sought, not for the green-sand ingredient, but for the greatest quantity of gypsum. But even if poor, enough of the earth was put on to make a very heavy and rich dressing of green-sand. And some of our applications were from the lower and much richer body, (and which also contains shells,) pronounced by Prof. Rogers, (for whose inspection the pit was dug,) to contain 60 to 70 per cent. of pure green-sand—and which also produced no lasting effect. The saddle-shaped oyster shell (*ostrea selliformis*) is found in some of our green-sand; and at Evergreen, (Prince George,) where I first discovered the formation of green-sand in 1817, and where I afterwards carried Professor Rogers, (in 1835) we gathered the finest and most perfect shells of this kind he had ever seen. Indeed, he then thought this shell to be an unknown species; and under that mistaken impression, at his request, I obtained for him beautiful drawings of two fine specimens, for the purpose of being engraved, which were executed by a friend of mine. The same shell is very abundant in the eocene marl at Coggins' Point, which lies over the green-sand, and which green-sand is manifestly changed from what was formerly the same kind of marl. How the change was produced is a mystery—and we admit, as our friend's comment, afterwards made, intimates, that our speculations thereupon are of very little, if any value.

The green-sand stratum at City Point, like most that we formerly tried at Coggins' Point, does differ in appearance, in constitution, and would very likely differ in effect as manure, from that at Newcastle, which is the nearest to a pure green-sand of any that has been profitably used there, containing no more than 2 or 2.50 per cent. of carbonate of lime. The City Point stratum contains no shells, but plenty of their empty impressions, and apparently no carbonate of lime. But however different, in some respects, from the Pamunkey beds, (and from our lower stratum,) this stratum, like all that we used from, has plenty of green-sand; therefore, if it be contended (and we are not disposed to deny it,) that this and our own Coggins' Point green-sand earth cannot produce effects as manure equal to those produced by the Pamunkey and New Jersey earths called by the same name, it will follow necessarily that there is some agent of fertilization other than, and superior to, the green-sand itself, and whose presence has not been detected by any scientific investigator. If this be true, it would remove all existing difficulties caused by discordant effects of the (supposed) same agent; for then there would be no reason why the green-sand

saw no shell of any kind, particularly of the latter, at Broad Neck, or at City Point. There are several, and I dare say many of the deposits on this river, or its vicinity, such as you describe in your writings as gypseous earth, with the clear and distinct impress of shells, but all traces of calcareous matter gone. That these deposits were once calcareous, I suppose can admit of no doubt, and, for aught we know, the green-sand deposits may have been much more calcareous than they are at present; and may now be undergoing the decomposing process; but certain it is to my mind, that there must have been some other ingredient in the green-sand deposits, than there is in the now gypseous earth deposits, as a different result has been produced by the decomposition; as it would seem there is a marked difference between the deposits found here, one of which is called green-sand, and the other gypseous earth. Again, if your reasoning be correct, in the theory lately advanced by you, that the sulphate of iron, in percolating through the different strata of calcareous matter, has decomposed the lime, or rather, that the sulphuric acid, from its greater affinity to lime than iron, has produced the more insoluble compound of sulphate of lime, or gypsum, why is it, that we only find the gypsum, in the upper or overlying stratum of green-sand, and that we still find the two together in a separate state, the gypsum in crystals, and the green-sand a distinct substance, or rather the crystals of gypsum sometimes as large as a pigeon's egg, intermixed here and there, throughout the stratum of green-sand? This green-sand being weaker, that is, containing less green-sand, and a lighter colored earth than the green-sand of the lower stratum, and between this overlying stratum of green-sand, containing the gypsum, and the underlying stratum of richer green-sand, but containing no gypsum, as can be ascertained by analysis, there should be a vein or stratum of rich green-sand marl, containing sometimes as much as 40 per cent. of lime. If it decomposed the upper, or overlying stratum of what was once as you suppose a body of marl, or calcareous matter, why did it not convert all into gypsum, and how did it pass the inter-

beds of New Jersey, and of Pamunkey, if having this unknown fertilizing ingredient, should not be every thing that that the report of the state geologist promises for green-sand in general, and yet the James river beds be worth as little as we had inferred, because, though rich enough in green-sand, destitute of that other and unknown ingredient. But if this be so, it takes away the merit as well as the mystery from green-sand, to bestow both on this newly suspected and still unknown agent.

In conclusion, we agree with our friend and correspondent, that almost nothing is yet known on the subject of green-sand; and we would urge upon all farmers who are able to use it, to do so, in the manner best suited to make full experiment, and furnish useful results—and to throw aside as worse than worthless, all that has been yet said of this manure in geological reports, and to rely only on what are supposed to be facts, and the results of practical experience.—Ed. F. R.

mediate, or middle stratum, which is now rich with calcareous matter, and pass to the lower stratum, the terminus of which we have never found, decompose this partially. (as there are still many shells in it, perfect as to form, and retaining all their lime,) but still no traces of sulphate of lime, other than as you suppose from a similarity of action on the growing crops? If I am correct in my views, as I think I am, I should rather think you will have to dip still deeper into the arcana of nature, than you have yet gone, before any satisfactory solution of the enigma of green-sand can be arrived at. I do not know but that you may be correct in your theory, or at least that it is a plausible one, of the sulphate of alumina and iron, acting partially upon the lime of the upper or overlying stratum of green-sand marl, as the sulphuric acid would in all probability, when coming in contact with lime and potash together, unite with the lime, in preference to the potash, and thereby produce the insoluble compound of sulphate of lime; and should any excess of sulphuric acid be present, and sulphate of potash be formed, it could not be detected, as it would, as soon as formed, be carried off by the water. But this admission can only apply to the upper or overlying stratum, in which is found gypsum; it could not apply to the two underlying strata, which both contain lime, but no gypsum.

The more, my dear sir, I investigate this subject, and seek after the *modus operandi* of the green-sand, the more I am involved in mystery. "Alps on Alps arise," at every step. I must therefore withdraw from the field of science, and leave it to the culture of your more skilful operations; while I confine myself within the more appropriate vocation of a farmer, of trying experiments, to arrive at practical results. Yours, &c.

CORBIN BRAXTON.

#### PROPOSED REMEDY FOR THE CONFUSED AND CONTRADICTIONARY STATE OF POPULAR NOMENCLATURE OF THE GRASSES.

From the Kentucky Farmer.

In a communication addressed by the present editor of this paper, some months since, to the editor of the *Farmers' Register*, on "Kentucky blue grass," the idea was suggested that a work on the grasses, giving all their common names in connexion with their botanic description, so that they could be readily distinguished in all parts of the country, as well by the unlearned as the learned, would prove a valuable acquisition to the agricultural literature of the country. The letter was copied from the *Register* into this paper, current vol., p. 156. It is highly gratifying to find, from the articles which follow, that the suggestion receives the powerful support of the able editor of the *Register*, and that it has been so favorably entertained by the distinguished botanists, Mr. Curtis and Professor Darlington, who have written to the *Register* and the American Farmer on the subject. Every intelligent farmer appreciates the importance of botanic science to the improvement of agriculture; and it is painful to reflect how much this and other sciences, applicable to the art of farming, have been neglected in the

education of the sons of the soil. May we not hope that, appreciating the utility of the various sciences in aid of practical husbandry, a higher standard of education for the farmer will be soon adopted. And such a work as the one proposed, by showing the utility of botany, would promote the study of that beautiful science by the farmer.

There are some excellent suggestions in the letter of Mr. Curtis; and that of Mr. Darlington may be regarded as a nucleus around which the useful work suggested will be formed. We hope that, in furnishing the materials for such a work, the Kentucky botanists will not be behind their scientific brethren of other regions of the country. Professor Short of Louisville and Professor Mitchell of Lexington, could give much assistance in perfecting the proposed work; and our highly valued correspondent, Mr. Lewis, whose letter, giving another plant to the list of Professor Darlington, is appended, could, and no doubt would, furnish much useful matter. Aid could also be derived from many other gentlemen of Kentucky, one of whom, our able correspondent, Judge Beatty, we almost feel authorized to pledge. We hope the scientific gentlemen named, as well as others, will send us not only specimens of the various grasses of this state, prepared as suggested, but communications for publication. We will take great pleasure in forwarding them to Mr. Curtis or to any other gentleman who will undertake the preparation of the projected work. By the way, it occurs that, as Mr. Ruffin of the *Register* proposes that the specimens be sent to Mr. Curtis, and Mr. Curtis proposes that they be sent to Mr. Ruffin, (Petersburg, Va.) it would be important that the latter gentleman, in behalf of the cause of American agriculture, enter into a correspondence with the most distinguished botanists of the United States, to solicit their aid in the undertaking, and to designate the one who shall finally complete the work from the materials to be furnished. Mr. Curtis has agreed to do it if the specimens be sent him, and no one else undertakes. No doubt he could well perform the task; and if he *absolutely* agree to do it, the public should be apprised, that specimens may be sent directly to him. Let, therefore, general notice be given in the *Register* and copied in all other agricultural papers. As, among other objects, the work is desired to establish a uniform nomenclature, some such action will be requisite, to render the undertaking successful; and it is to be hoped that every botanist in the country will hold himself bound to do something in this enterprise, not only as a contribution to the science of botany, but as a concession to the claims of agriculture. Mr. Ruffin's high character as an agricultural writer, his extensive acquaintance, his fortunate location at a point midway between the extreme north and south, together with his energy and spirit in promoting the interests of agriculture, all indicate him as the person peculiarly fitted to organize the action which shall ultimately accomplish the desired object. In the hope that he will recognize our right to make the nomination, and that he will accept it, we undertake to guaranty him all the aid which the Kentucky botanists can bestow. We believe the plan proposed will insure the execution of the work; while if no organized system of action be adopted, we may never see its completion and certainly

never in the perfect form so desirable for a work of its contemplated character. What say you, Mr. Ruffin? Let us hear through the Register. A botanic work on the grasses alone would make a useful volume; and if this attempt succeed well, the same kind of exertion would ultimately furnish the community with practical information on all other branches of botany.

In answer to the above call upon us by our highly esteemed brother editor, we repeat our readiness to do any thing in our power to further the important object in view. We had no intention of shifting from ourself any trouble, when recommending to those who could do so as conveniently, to send specimens at once to Mr. Curtis; but because of the few opportunities for conveyance from this place to his residence. However, the communication from Mr. Curtis, which will follow, serves to remove much of the supposed difficulties of transportation, as well as furnishing ample instruction for the preservation of specimens of grasses. We trust that enough farmers, or countrymen, who are practical and careful observers, will collect specimens in the manner directed, and with these furnish the common names of each, and every name known. The service will be still more valuable if they will also furnish statements of the agricultural characters, habits, and advantages or disadvantages of each grass, as far as known. We shall do something in this respect, so far as our present unfavorable location will permit. This part of the service can be even better performed by mere farmers, who are generally quite ignorant of botany, than by scientific botanists of the highest and best deserved reputation; because the former class know more or less of the agricultural characters of grasses, and of their vulgar provincial names, of which scientific men could not be generally or extensively informed. But when a practical cultivator, who has these advantages of his occupation, adds to them even but a slight acquaintance with the botanical characters, and is thereby enabled to class and identify grasses, he may do much more than others for the object in view. There are probably many such among our readers, without including any but such as would disclaim all pretensions to call themselves botanists. Among such countrymen and practical cultivators (formerly or now) we will name, (as they are nearest at hand, and best known to us,) Dr. Gideon B. Smith of Baltimore, T. S. Pleasants of Chesterfield, and A. Nicol, of Sandy Point, and to all of whom the readers of the Farmers' Register have been indebted for information on botanical as well as more frequently on other subjects. Besides these, and such as these, there are other of our valued con-

tributors, for example, David Thomas, of New York, Professor Armstrong, of Washington College, Virginia, Dr. James F. McRee of North Carolina, and M. Tuomey, esq., of Loudoun, Virginia, all of whom possess much botanical knowledge, and could, in their different localities, render excellent service to the end in view. We then wish of all named, and of any others who may be inclined to aid the object, to do something towards it. We offer to be the recipient both of communications and specimens, when most convenient to the sender; and if there is proper action on the subject, there will be collected materials, before this year is ended, for Mr. Curtis to digest into a full and satisfactory botanical and agricultural description of our common grasses, with their synonymes. And by this, more light may be afforded on the subject, and more service rendered to practical agriculture, than by every thing on grasses that has yet been before the public.—ED. F. REGISTER.

#### DIRECTIONS FOR COLLECTING AND PRESERVING SPECIMENS OF GRASSES.

To the Editor of the Farmers' Register.

Washington, N. C., March 8th, 1841.

Dear Sir:—I now send you, as promised, the mode of collecting and preserving specimens of grasses.

1st. As to the time of collecting. This should be when the flowers are fully grown, but before they begin to fall off. If any one is in doubt as to what are the flowers of grasses, the easiest way to inform him is to say, that whatever is not stem or leaves will be the flowers. They have a great variety of forms, but the above rule will readily determine them.

2d. The whole plant should be collected, not excepting the root, though the dirt should be entirely removed. Of the large coarse grasses that attain a height of three to five feet or more, a foot or two of the summit will answer. Plants should never be collected when wet.

3d. Take half a newspaper and fold it once, like a sheet of cap or letter paper; then place within it as many plants as there is room for without their overlaying each other.\* Thus do with as many plants as are collected.

Now lay these sheets between other newspapers (called driers) alternately over each other; that is, first a drier, then a sheet with the plants in it, then a drier again, and so on, no matter how large the pile.

The parcel should now be put under a pressure of from fifty to a hundred pounds and remain for about twelve hours, when the driers should be removed and *dry ones* put in their places. Three days will be sufficient for drying grasses, changing as above every twelve hours. For a press, a piece of board large enough to cover the paper

\* If the plant be longer than the sheet, it may be bent over, or broken, though not severed.

might be used, with a rock, some large books, or a heavy trunk, for a weight.

When the plants have been thus dried, they can be put away in dry papers, enclosed in a newspaper and tied round, so that they may not be injured by being broken or tossed about. They should be put away in a drawer where they will not suffer from careless handling.

4th. In transporting them care should be taken that they get no injury from rubbing, which will happen if they are loose. They should therefore be packed tight enough to avoid that. When carefully tied up or sealed, they can be conveyed to any distance in a trunk by private conveyance; or in a small box made to the size of the parcel may be sent by any of the ordinary public conveyances. Boxes of plants are yearly traversing the country in this way.

If the work you have put upon me is worth doing, it is worth doing well; but this cannot be attained without the aid of those who are more particularly interested in it. I hope therefore, that no one will leave for somebody else to do what he can so easily do himself. The grasses within the reach of any one man, the names of which he is acquainted with, are not very numerous, and the trouble of preparing two or three specimens of each will be trifling. It must be the agriculturists who will do the work of furnishing the common names, for botanists are generally professional men who are very imperfectly acquainted with them. I will however draw upon them personally for their knowledge, if you will secure the labors of the farmer in this work.

If it will furnish any new inducement to the agriculturist to engage in the plan, I will promise to return him his plants, if desired, *properly named*, so that he may have specimens in hand to refer to in cases of doubt. Very respectfully,  
yours, &c., M. A. CURTIS.

#### ESTABLISHMENT OF A BOARD OF AGRICULTURE BY THE GOVERNMENT OF VIRGINIA.

[Just before our last number was completed we learned from the newspapers that an act had passed the legislature to establish a Board of Agriculture. It was not until some time after, that we learned the provisions of the enactment, and obtained a copy of the law, which will be presented below. Though we have, at former times, labored zealously to obtain from the legislature this one boon to the agriculture of Virginia, even if nothing else were done, we had abandoned all such efforts in despair; and though a bill for the purpose has ever since been annually brought forward, we have had no participation in the matter; nor did we know that it was before the legislature this session, until we read of its passage by the lower house.

We hope that even this poor and feeble beginning may do some good, and lead ultimately to much good to agriculture; but the means are poor indeed, while the objects and duties of the

board (as stated) are very burdensome and difficult, not to say impossible for such a body even to approach in performance. It would be both unreasonable and foolish to expect much from a board thus constituted, and its existence *barely tolerated* by the government, instead of being encouraged, sustained and aided in its course, and the pursuit of the designed ends. We foresee that they who have all along opposed all such measures for the improvement of agriculture, will be ready to cry out upon the inevitably feeble operation, as proof of the uselessness of this board, and pronounce the expediency of its being suppressed as worthless. The objection which will be most strongly felt by individuals to acting on this board, will not be the laboring without any pecuniary reward, or the opportunity to acquire some honor by rendering the service required, but that they will probably even lose reputation, by the impossibility of doing scarcely any thing of their arranged and expected duties. However, let us hope for the best results—and among them, that proper members may be found who will be willing to risk loss of credit to themselves, added to the certain sacrifice of much labor, and that with but small prospect of rendering any important service to their country, or effecting much for the object of their association.—ED.]

#### *An act to establish a Board of Agriculture.*

Whereas, it is represented to the General Assembly of Virginia, that the agricultural community have various interests, requiring the fostering care of the state, which should be extended to them according to some system approved by observation and regulated by experience. And whereas it appears to the General Assembly that these ends would be promoted by the establishment of a Board whose duty it should be to present to the Legislature from time to time a general view of the agricultural statistics of the commonwealth—to inform the public of the progress of improvement—to communicate such facts, as when collected and digested, may promote the agricultural interests of the state: and to suggest such measures for the adoption of the General Assembly, as the aforesaid board may deem proper for the development of the resources, and the protection and advancement of that important branch of industry in the commonwealth;

*Be it therefore enacted*, That a board, to be called a "Board of Agriculture," shall hereafter be constituted, to consist of eight members, to be appointed triennially by the executive of this commonwealth; of whom two shall be selected from each of the four divisions of the state, as specified in the second section of the third article of the constitution, for the apportionment of representation in the House of Delegates; any three of whom may constitute a quorum for the transaction of business.

*Be it further enacted*, That it shall be the duty of said board to present annually to the legislature a general view of the condition of agricul-

ture in the state:—to report the nature and quantity of the agricultural staples, so far as they may be able to ascertain the same: to collect and digest such facts in relation to the improvement and cultivation of the soil, and the best modes of preparing its various products for their appropriate uses, as they may think would afford useful information to the agricultural community—to report, so far as they may ascertain the same, the relative degrees of encouragement afforded by the state of foreign and domestic markets to the various agricultural productions of this commonwealth, and to suggest to the legislature such measures as they may deem desirable for the development of the resources, and the promotion of the general interests of agriculture in this commonwealth.

*And be it further enacted,* That it shall be the duty of said board to hold one session in each year, at such time and place as may be fixed upon by the board, with the consent of the executive.

This act shall be in force from the passage thereof.

**PREMIUMS OFFERED BY THE HENRICO AGRICULTURAL AND HORTICULTURAL SOCIETY.**

(Published by request of the Executive Committee.)

At a meeting of the Executive Committee of the Henrico Agricultural and Horticultural Society, on the 27th day of March, 1841, the following were determined upon as the subjects for and amounts of the Premiums to be awarded at the first exhibition of the Society, which will be held on Wednesday, the 26th day of May next, instead of the time heretofore reported, viz:

- 1st. For the best horse or colt, calculated to produce the best stock for the draught or saddle - - - \$15
2. For the best brood mare do. - - - 10
3. For the best jack - - - 15
4. For the best bull for domestic purposes - - - 10
5. For the best milch cow - - - 10
6. For the best yoke of oxen - - - 10
7. For the best boar of improved breed - - - 15
8. For the best brood sow, to be exhibited if practicable with her litter of pigs - - - 10
9. For the best specimen of fruits, the production of the exhibitor—a fruit basket of the value of - - - 10
10. For the best specimen of rare and beautiful plants or flowers—a silver bouquet holder of the value of - - - 10
11. For the best specimen of vegetables - - - 15
12. For the best cultivated market garden, not less than one acre—a set of garden tools of the value of - - - 15
13. For the best specimen of domestic wine, the production of the exhibitor - - - 10
14. For the best specimen of domestic silk not less than one pound, the production of the exhibitor - - - 10
15. For the best specimen of butter not less than 5 pounds—a silver cream pot of the value of - - - 10
16. For the best suit of clothes of Virginia manufacture, the premium to

- be given to the producer of the material of which the clothes are made \$15
17. For the best specimen of agricultural implements, including cutting machines, corn-shellers, &c. - - - 15

The committee have not felt themselves warranted in offering higher premiums at this time, but will increase and enlarge the subjects as the funds of the society may enable them to do.

They deem it proper to give notice, that at the fall exhibition the following additional premiums will be given, and that they will be as large as shall be practicable, to wit:

For the best cultivated farm.

For the best field of corn, not less than 5 acres.

For the best crop of turnips, beets, carrots, parsnips, sweet or Irish potatoes, not less than half an acre of each.

For the best piece of domestic carpeting, not less than 20 yards.

For the best hearth rug.

For the best table cloth.

For the best counterpane, bed-quilt or comfort.

And for other articles of household industry.

The members who have not subscribed to the constitution, and the citizens generally, will be called upon by some member of the society to enable them to become members.

JESSE H. TURNER,

TH. S. DICKEN,

RICH. G. HADEN,

WM. H. RICHARDSON,

JOSEPH RENNIE,

WM. D. WREN,

*Executive Committee.*

**PROPOSED EXHIBITION OF THE HENRICO AGRICULTURAL AND HORTICULTURAL SOCIETY.**

Communicated for the Farmers' Register.

The first exhibition of the Agricultural and Horticultural Society of Henrico County, will take place at Goddin's Spring, near Bacon's Quarter Branch in the city of Richmond, on Wednesday the 26th May next, if fair, if not, the next fair day thereafter.

It is specially requested that all animals, and other articles intended to be put in competition for the premiums, may be at the place of exhibition at or before 10 o'clock. Indeed so important is it that this request be strictly attended to, that no article will be received after that hour.

The respective committees appointed to adjudge the articles and award the premiums, will be at their posts at 9 o'clock, or earlier, to receive and arrange such articles as may be offered.

With this exhibition it is intended to connect a fair, so that all persons, whether members of the society or not, having fine animals, beautiful plants or flowers, rare exotics, valuable implements of husbandry, or any other article connected with the rural art, and wishing to dispose of them, will be permitted to bring them on this occasion, when we have reason to believe a good opportunity for sales will be presented.

At 11 o'clock precisely, the exhibition will commence.

At 12 o'clock the address will be delivered by the president, immediately after which the premiums will be distributed to the successful competitors, and then the fair will commence.

It is urgently recommended that every member of the society will, *without fail*, be present, and at as early an hour as may be, and that he appear with a badge of green ribbon on the left lapel of the coat.

The society will dine together at the place of exhibition. After the fair premiums will be given, in money or its equivalent in plate, at the discretion of successful competitors.

Persons who intend to compete for the premium offered for the best cultivated garden, are requested to send their names to some member of this committee as speedily as possible.

Stock arriving before the day of exhibition, will be provided for in the best manner by Captain Goddin, whose accommodations on the spot are most ample.

The farmers of the state generally, who may favor the society with their presence at this, its first exhibition and fair, will be most cordially welcomed."

JESSE H. TURNER,  
TH. S. DICKEN,  
RICH. G. HADEN,  
WM. H. RICHARDSON,  
JOSEPH RENNIE,  
WM. D. WREN,  
*Executive Committee.*

#### THE EVERGLADES—HONOR TO WHOM HONOR.

From the Fredericksburg Arena.

The Everglades of Florida form one of the most striking features of the scenery of the United States. The word has been familiar to the ears of the people, for three or four years past, yet we doubt whether one in ten has formed a definite idea of what is meant by the term.

The Everglades lie south of the 27th degree of latitude, and occupy the greater portion of the southern part of the Peninsula of East Florida. They are separated from the Atlantic, on the east, and from the Gulf of Mexico, on the west, by slips of land varying from 5 to 20 miles in breadth. There are a number of outlets to the Atlantic, whilst, on the western side, there is but one communication with the Gulf, called, recently, Harney river. Let the reader imagine a prairie, from twenty to thirty miles in breadth, and from eighty to one hundred in length, covered with water from two to four feet deep, with a rank grass springing up three or four feet above the surface of the water, and the whole interspersed with islets, varying in size from two to three acres to several hundred, and these islets generally covered with a thick wood. There are sometimes winding threads of water in which no vegetation appears, but to penetrate this inundated prairie in boats, it is necessary to force them through grass.

The Indians took refuge in these islands. They believed they were inaccessible to the white man. But their fastnesses have been invaded and their sense of fancied security dispelled. Col. Harney, of the 2d Dragoons, has on two occasions traversed this remarkable country,—on the

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first, entering from the Atlantic side and crossing to the Gulf of Mexico. He richly deserves all the praise for gallantry and enterprise which has been extended to him, but it is a mistake to claim for him, as has been done generally, the honor of being the *first* officer who invaded the Everglades. We would be the last to rob him of the least sprig of his hard-earned laurels, and he is too gallant and generous a soldier to stand in need of, or to wish for, credit justly due to another.

The honor of having first surprised the Indians in their fastnesses belongs to Col. Bankhead, of the Artillery. In March, 1838, he led an expedition from Fort Lauderdale, consisting of soldiers, and a detachment of sailors under the command of Lt. Powell, of the Navy—the whole amounting to nearly three hundred men. They had a number of boats, which carried their arms and ammunition, and which were pushed through the grass by the men, who waded in mud and water up to their waists. Col. Bankhead surprised a party, but before the island could be surrounded the Indians withdrew under cover of the night, leaving, however, their boats, provisions, utensils, &c. The labor which this party underwent and exposures to which they were subjected, may be, in some degree, conceived from the amphibious character of the scene of operations.

#### ON SAW-DUST AS AN ASSISTANT TO MANURE.

By Mr. William Sim, Drummond, Inverness-shire.

From the Edinburgh Quarterly Journal of Agriculture.

Previous to the year 1839, I used to allow a great deal of saw-dust, from a mill that I occupied, to go down the stream as worthless, but, in the spring of that year, I took it into my head to try if it could not be made useful to manure. With this view, I collected a large quantity and had it burnt, but was quite disappointed at the result, the quantity of ashes being very small, and by no means adequate to the expense of consuming the article. I then determined to try whether it could not be turned to better account by decomposing it through fermentation; and having made use of it to litter swine in a fold, I had a good deal that had been so employed carted out to a turnip-field in the month of April, and mixed up on a dunghill with an equal quantity of common farm-yard dung. In this way it has fully answered expectation. Fermentation went on as well as I could desire. The heat was very great, but, having applied water, there was no mouldiness, and the mass assumed a fat greasy appearance. It was put into the drills in bulk equal to ordinary dung, and the turnips are about the best I have; indeed, superior to any on the farm, except when an expensive application of dung, bones, and nitrate of soda was made.

I have been so well pleased with the effect of the saw-dust in the fore-mentioned trial, that I am now very careful not to lose any of it, and, during the past summer, have had folds for cattle as well as pigs littered with it, being convinced that it will be profitable whenever thoroughly decomposed.

An immense quantity of this article has hitherto

not only been lost, but made hurtful to salmon on going down the rivers. Instead of being so infectious, it may be rendered a most useful adjunct to other as well as to common manures, and I think it very probable that if nitrate of soda were used along with it, its action might come out still more strikingly.

Common fir bark may be put into a state for decomposition by laying it on roads before byres, where the droppings of the cattle will mix with it, and the carts go over and grind it. I have had a quantity operated on in this manner.

#### THE POSITION OF NEW YORK IN REGARD TO BANKING AND SPECIE PAYMENTS.

From the Journal of Commerce.

We hear from Philadelphia and other places at the south, that the Banks of New York will speedily suspend specie payments. This report has been so confidently circulated, that it has, at least in some small degree, embarrassed exchanges on this city. The citizens of New York suffer less from such an error than those at a distance who deal with us; yet the injury is general, and should not be inflicted without at least some plausible ground to support it. But we do not expect to prevent the repetition of the rumor in question by expostulation. We have no doubt many men are very sincere in believing that the New York banks must soon suspend. Perhaps the fact that we write this article, and so show that we care something about the matter, will confirm their opinion. Those who choose to believe us, will have the benefit of the truth. There is nothing in the state of things at present which has the least tendency to produce suspension here. Specie is flowing in from all quarters; the exchanges of the whole world are in our favor, with the exception, it may be, of Cuba; the paper held by our banks is almost all of it mercantile paper, given for actual purchases, and will be paid at maturity, and very little of it has more than ninety days to run. The merchants are so independent in their circumstances, that the whole loans of the banks might be paid in without producing any very great distress. Specie is as plenty as paper. What then is to cause suspension? We shall not break because Philadelphia breaks, or Baltimore, or any other city. Their course imposes no necessity upon us, but rather brings us strength. The uncertainty about southern currency is making New York, more rapidly than before, the settling house of the whole Atlantic coast. Indeed we understand that it is no uncommon thing for transactions in Philadelphia to be made payable in New York, though neither of the parties resides here; and some of the leading houses, in Philadelphia and farther south, have found it convenient to open accounts with Wall street banks, and keep their surplus funds here. Bills of exchange drawn in foreign ports on any place upon our Atlantic coast, are now very extensively made payable in New York. So, taking it all in all, those who look for the dishonor of New York, will find the result they anticipate receding farther and farther from their grasp.

#### DIVIDING CAPITAL.

From the Philadelphia Ledger.

Certainly it was never contemplated by our legislature that any bank chartered by the state should impair its own capital stock by dividing it among its stockholders—leaving to the community only its name as a guaranty for the safety of its issues. Yet, we believe, and record the prediction for a future day, that such will be the effect of either of the bills now before the legislature for again legalizing the suspension. In addition to its other abominations, it authorizes suspended banks to divide their profits.

Does not every member of that body know that it is the easiest matter in the world to *make profits in figures*, where the enjoyment of an irresponsibility may hide from view a broad disparity between *figures* and *facts*, where it may substitute a *name* for a *thing*, may cause the mere *title* of value to take the place of value or its representative?

Is an instance in point needed as an illustration of this indirect way of *dividing capital* and calling it *profits*? Thousands are at hand. A prominent one may be found in the case of the United States Bank. Every dividend which has been made by that institution since it entered into the mercantile business, if not for a long time previous, has been made from her capital, and not from the profits of her business over and above that capital. Yet we can readily conceive, however unpleasant to the parties the implied alternative may be, that the direction of the institution may have been guiltless of knowingly dividing its capital stock; for by the fiction of paper by which names can be substituted for things, multiplied at pleasure and retained while things vanish, figures would very possibly at any time have shown the dividends to have been made out of its profits.

If we mistake not, it is not over a year ago that the bank published a statement calculated to show that it had a surplus on hand over and above its capital of some one or two millions of profits. In its present condition be such as it is estimated by the public and by some members of the legislature too, as we judge by the bill before that body for a reduction of its capital, can any one suppose the institution has really lost such an amount of money in so short a space of time? Has not its real loss been constantly going on for at least a period of several years, and was it not accelerated by the very means taken to avoid realizing it? Did not the very increase of its own liabilities hold up the price of its own assets?

#### ON THE DESTRUCTION OF THE RED SPIDER.

From the Magazine of Horticulture.

A certain remedy for the vile insect, known by the name of *red spider*, no matter whether it has made its appearance on the grape vine, peach tree, or any other tree or plant that is grown under glass: sulphur, will destroy them, used in the following manner:—After syringing the trees or plants with water, as thoroughly as it is possible so to do, in the evening, when the sun is leaving the glass, fill half a dozen saucers or more, (ac-

cording to the size of the house,) with sulphur, and place them on the top of the flues, or pipes, if flues are not used, ten feet apart, and start the fires; the heat of the flues or pipes will heat the sulphur, and the vapor will rise and fill the house completely full, so much so that in the morning you will smell it quite strong, when you enter the house: by following up this method a week or ten days, the red spider will make its exit. A dry heat is the red spider's element, and they make rapid progress if this is not counteracted by moisture and sulphur, which completely destroys them.

J. W. RUSSELL.

*Mount Auburn Cemetery, Feb., 1841.*

We can attest to the certainty of Mr. Russell's plan for destroying the red spider, one of the most destructive insects which infest green-houses, hot beds, and hot-houses; sulphur and a plenty of moisture are the only things which have ever enabled us to get rid of this pest.—*Ed.*

#### REMARKS ON SALT AS MANURE, AND FOR STOCK.

*Extract from the London Farmers' Magazine.*

We alluded to several experiments which had been instituted by Mr. Blackwood, in this neighborhood, for the purpose of ascertaining the relative merits of salt as a manure in raising potatoes, turnips, &c.; and we are now enabled to say that the result of this year's crop of turnips, goes far to establish the fact that salt prepared in a compound, and applied in the way which we formerly described, will bear a comparison with the best description of farm-yard manure in this particular. For not only has Mr. Blackwood again succeeded in obtaining a very large crop, but we can also bear testimony to the fertilizing properties of the compound from our own experience, having this season, from its application, produced fifteen acres of very fine turnips. In the compost which we applied there was mixed seventy-five bushels of salt, or at the rate of five bushels an acre, and we remarked, after the fermentation had proceeded for some time, that the texture and nature of the compost changed as it were, and the whole mass assumed a moist and rich appearance, which we ascribed to the operation of the salt in the mixture. It cannot however be expected that we are prepared to enter into a chemical analysis of this substance, or scientifically explain the manner and way in which it operates in the compound so as to produce these results. Our present object is rather to direct attention to the subject, for should this composition prove of general applicability, and we have no reason to apprehend the contrary from the success which has attended Mr. Blackwood's practice for the last six years, it will then be of the utmost importance to the agricultural community, that a knowledge of its beneficial influence as a manure or stimulant should be widely disseminated amongst them. It will be observed, that a general want of success has hitherto attended the numerous experiments instituted upon salt for agricultural purposes; but then these were never performed in such a manner as to prove satisfactory, for the great secret appears to be in submitting the compost to that degree of

heat which is necessary to produce fermentation, and the process should be continued for some weeks previous to the mixture being applied to the land, so that the salt may either be decomposed or undergo some change from the fermentation which seems necessary for developing its fertilizing properties. Now the majority of those who have been in the practice of testing the properties of salt have either applied it to the soil in its mineral state, or have simply diluted it with some liquid; and even when a compound was formed of earthy matters and other substances, the salt was simply mixed with these ingredients before being applied to the land, or at all events without any attempt being made to produce that fermentation which appears to be essentially necessary to the success of the whole operation; hence the reason why reports of experiments on the use of salt as a manure have hitherto been as different as the soils on which they were made.

We are aware that it has frequently been asserted by learned and scientific men, that salt is only a stimulant and possesses no nourishment, but may excite the vegetable absorbent vessels into greater action than usual. We are not prepared to controvert this assertion, but the result of several experiments would go far to establish a different view of the matter. In proof of this we may be allowed to refer to an experiment which is related by Dr. Holland, well known by his agricultural survey of Cheshire. "After draining a piece of sour rushy ground about the middle of October, he ordered some refuse salt to be spread upon a part of the land at the rate of eight bushels to the acre, and in another sixteen bushels. In a short time the vegetation disappeared totally, and during the month of April following not a blade of grass was to be seen. In the latter end of the month of May a most flourishing crop of rich grass made its appearance on that part where the eight bushels had been laid. In the month of July the other portion produced a still stronger crop. The cattle were remarkably fond of it; and during the whole of the ensuing winter (which is ten or twelve years since) and to this day, the land retained, and yet exhibits a superior verdure to the neighboring closes." As further confirmatory of the above experiment, we may mention a circumstance that was related to us by Mr. M'Nab, the distinguished manager of the botanical garden near Edinburgh.

For the purpose of exterminating the weeds with which the walks of the garden were infested, and if possible prevent their growth, Mr. M'Nab applied a pretty large quantity of salt to their surface, which had the desired effect during the first season, as not a single weed could be seen; so powerful indeed had been its operation, that part of the box-wood edging with which the salt had come in contact gave way. But afterwards, instead of having any effect in checking the weeds, it tended rather to promote their growth, as they appeared during the second and third seasons in greater abundance and luxuriance than they had ever done before. It would thus appear that salt is susceptible of undergoing certain changes, both before and after being applied to the soil; but before we can arrive at a just conclusion with respect to the mode in which it operates so as to become a fertilizer, science must lend her aid to practice, and both must be combined to



attain this end. One thing, however, appears to be beyond the reach of dispute, that salt on certain soils, and applied in the manner we have alluded to, and in certain quantities, has a fertilizing tendency. In alluding, however, to the probability of salt becoming a useful auxiliary to the farmer in the cultivation of his crops, we must not overlook the advantages that would result from its more extended application as a condiment and ingredient in the food of animals, qualities we apprehend, which as yet are very little understood; but that it might be so employed with great advantage, the following extracts go far to prove. It is stated in the *Edinburgh Encyclopedia*, "That salt given with the food of cattle augments its nourishment. That in proportion to the quantity of salt eaten by cattle, the effects of the augmentation are perceived. That no ill-consequences follow its use even when given without stint. These propositions are supported by unquestionable evidence, and the trials of very many persons. Crau, in the jurisdiction of Arles, in the county of Provence, France, has an extent of six leagues by three, the whole surface of which is covered with small rough stones, and not a tree or bush is to be seen upon the whole district, except a very few scattered on the border; yet on this apparently barren spot, by the free use of salt, more numerous flocks of sheep are bred and reared than upon any other common of equal extent in the kingdom; and what is not less remarkable, the sheep are healthier, hardier, and endure the severity of winter with less loss than those fed and bred on more luxuriant pastures, and that have the advantage of greater shelter. Add to this, that the wool of the flocks bred and brought up in the Crau is not only the finest, but bears the highest price of any in France. It is concluded that these surprising effects are consequent upon the unlimited use of salt, for allowing every excellence that can possibly be supposed inherent in the herbage, yet the quantity is so small, that without the abundant use of salt, a fourth part of the sheep kept in the Crau could not subsist on it." In Spain, where the finest wool in the world is produced, large quantities of salt are given to the sheep, to which they attribute, in a great measure, the fineness of the wool. Lord Somerville, who was among the first to introduce the practice of giving salt to sheep in England, states, in a communication with the Board of Agriculture, that "he purchased 200 Merino sheep in Spain at about 22*l.* 10*s.* each, which he brought to England, and as they had been accustomed to receive salt in Spain, he continued the practice when he brought them to this country, and he also extended the practice to his other sheep. His lordship some years afterwards removed from the rich vale of Taunton, in Somersetshire, to an estate which he had purchased in Surrey; and this being a light, dry, sandy soil, he did not think it necessary to go on at such a large expense, as salt then was so heavily taxed; but for some years afterwards he lost many of his young sheep, which he was afterwards inclined to think might have been saved, had he continued as before, to give them salt, and he subsequently reverted to his former mode of giving his sheep their regular supply of this useful ingredient. He says, that sheep require more salt in the autumn and spring months, when the dews are heavier, than in summer or winter, and that

they consumed at the rate of one ton for every thousand sheep annually." Lord Somerville, together with Mr. Curwen, Sir John Sinclair, and others, all unite in recommending the use of salt as a preventive against the diseases incident to wet situations, and their experience almost proves the necessity of it. Sir John Sinclair, in his *Agricultural State of the Netherlands*, says, "that at Mr. Mosselman's farm at Chenoi, beyond Wavre, he found that salt was used for sheep, and that by allowing them to lick it, the rot was effectually cured." Mr. Bracebridge, of Walton-on-Thames, also was induced to drench some sheep, which were affected with the rot, night and morning with strong brine, after which he did not lose one; they became fat, and the meat was as fine and good as if the animals had never been affected. "In strong pastures," observes Lord Somerville, "when seasons are wet, the rot often spreads destruction over whole tracts of country; here salt must be beneficial. It is supposed, and with great truth, to correct acidity in the stomach, a disorder common to sheep even in Spain, but of a much more serious nature in the damp climate of Great Britain, more particularly when stocked on moist green food, such as turnips, vetches, and young clover." In Sweden, in Saxony, in Silesia, and in France, salt is given to sheep without stint, and with the best results. Now, when we consider these unequivocal testimonies in favor of the free use of salt, we cannot but express our surprise with Mr. Arthur Young, that "this practice should be common management in almost every country in the world, England excepted."

#### DESULTORY OBSERVATIONS ON THE BANKING SYSTEM OF THIS COUNTRY, AND THE EFFECTS OF ITS DIFFERENT MODES OF OPERATION.

*Addressed to the consideration of the agricultural interest.*

The great agricultural interest of the United States exceeds not only each other one, but all other interests together, in the number of its members, in results of productive industry, in amount of wealth, and in constitutional and rightful political power. The agricultural interest indeed is identical with the general interest of the country and nation; and were it to exercise its rightful political power always, (as it does very rarely,) for the advancement of its own benefit, even that purely selfish object could not be attained except by advancing the general interest and welfare of the country at large. This follows, not because of any peculiarity of agricultural pursuits, but simply because agriculture in this country is the greater interest, and all others are minor, and comparatively much smaller interests.

Yet, with all its political power, and the manifest expediency and propriety of exerting it, the great agricultural interest is continually influenced and directed by other classes, acting to forward their respective separate and opposite interests. And thus the general interest, which always agrees with the true interest of the agri-

cultural class, is frequently made to give way to the conflicting and adverse interests, either of the commercial, banking, manufacturing or other classes—any of which, because being minor interests, may be enriched by measures injurious to the general interest of the community.

The most striking and deplorable example of such a condition of things is presented in the long existing and baneful and yet commanding influence of the banking and paper-money interest of this country—which, having the means and power to govern the great commercial class, and to influence and direct the newspaper press, and adding these great powers to its own—has, by this combined influence, deluded, governed, and pillaged, and now has nearly enslaved, the great agricultural interest of this country. Very few of those individuals who are well acquainted with the operation of this system are enough free from its control, whether exerted through influence, or bribes, or vengeance, to dare to expose its iniquities, even if they have not a direct private interest in their being upheld and continued. It is not only their debtors whom the banks can control, or otherwise punish, if refusing submission to their will. So cunningly and closely has their influence been wound around society, that not one man can venture to oppose their will, and expose their frauds, without injuring himself, in his business, or in the opinion of a large and influential, and deservedly respected portion of the society in which he lives, and by the loss of whose approbation no man can fail to suffer. We are fully aware of the danger, the certain injury, to be incurred by daring to oppose and in any manner expose the frauds and abuses of the banking interest. We have already been made to feel, (though not thereby alarmed, nor to be deterred by,) the malignant power of their influence on society, and in consequence of the opposition to the system, and exposure of its action, made through this publication. But at all hazards, we shall proceed in this course—and endeavor if possible to awaken the members of the agricultural interest of Virginia, and of the whole confederacy, to a sense of the enormous evils which they have suffered, and the system of pillage which is still pursued by the banking system of this country, which is fraudulent in operation even as authorized by the laws, and far more fraudulent in violation of law. In pursuance of this object, we respectfully ask the attention of all readers, but especially of the agricultural class—and the support and countenance of all who approve our object in this warfare, which as yet we have carried on alone, without aid, and almost without a word of encouragement.

Before entering upon the subject, it may be necessary, to prevent misconception, to state in advance, what a reader might indeed hereafter learn from the tenor of our subsequent remarks. We do not oppose, as many have improperly inferred, but on the contrary most heartily approve and desire to have established, a *legitimate and properly operating banking system*. Banking proper is a most important and indeed essential auxiliary to commerce, and highly beneficial to the whole community; and we would make such banking as free from restraint as any other beneficial direction of industry or capital. But we might have the proper and beneficial use, without

the numerous existing abuses of banking; and in the existing condition of things, we have the abuses to the fullest extent, and but little of the proper operation and use of banks and banking. We would no more desire to prevent or restrain the proper banking business or trade in money, than we would to restrain the commercial dealings in cotton cloths or hardware, or any other ordinary and useful direction of trade; and at the same time, we would no more grant peculiar privileges to the banking business, or exemptions from obedience to law, and compliance with legal obligations, than to these, or any other branches of trade.

At this time it would be difficult to find any individual, of any class in society, who would advocate all the features of the banking system, and the whole procedure of the banks of this country. The objections stated by different persons would vary much, according to their amount of information; and still more according to the supposed interest of the individuals. But there is not one person to be found, even among bank stockholders, bank officers, directors, or the neediest of the debtors and most submissive slaves of banks, who will not confess, (when safe to utter it,) that some one or more abuses of the system greatly require abatement or reform. Without including the stronger and more general objections which would be made by persons who have studied the subject as a branch of political economy, and free from the strong bias of self-interest, we are content to rely for proof of the position just assumed, upon the opinion of those who are friendly to the operation of the banking system, and who are the apologists for the greater number of the actual abuses. Yet out of the mouths of these, the friends or favored debtors, or even truckling tools of the banks, there would be enough of condemnation of the acts of these institutions. And such objections have existed, and have been whispered, if not proclaimed aloud, for years past, and are becoming every day more extended and more strong. Yet, to this day, there has been not one measure of reform of the banking system adopted and adhered to by the government of Virginia. It is true that some minor, but still beneficial restrictions on banking abuses have been enacted; but every one of these new limitations, as well as the more important of the previously existing, have been repealed, or the operation suspended, as soon as the banks required it, and the annulling of such restrictions was deemed essential to the pecuniary interest of the banks.

It is an all-important question for the country, which should be thoroughly investigated, *why it is, that when gross banking abuses are admitted by all persons to exist, not one has been, or is proposed to be corrected?* To the answering of this question, as well as to marking the abuses, these and some succeeding articles will be devoted.

It is not our purpose to present an elaborate or systematic treatise on banking and currency in general. Able and profound works of this character are already attainable by all persons who feel enough interest in the subject to draw information from the highest and most abundant sources. Neither do we design to state in minute detail, the acts of banking fraud and

pillage, and injury to public interests and private rights, which would serve to illustrate and prove our assertions of the evils of the system. Such an exposition, even if embracing only important acts and cases strictly in point, would require the whole space furnished by this entire publication, to the exclusion of every other subject. We shall merely attempt to state important truths in plain language, and which we trust will be read by numerous members of the great agricultural community, who would perhaps gladly learn *some truth* on this subject, on which almost every existing newspaper in the southern states, either is silent, for the purpose of concealing truth, or speaks but to sustain and diffuse falsehood for the benefit, and at the dictation, of the all-powerful banking interest.

To clear away the fog in which banking operations are enveloped, it is necessary to separate them, and describe each one separately.

There are three several and entirely different operations combined in every bank of this country, and which, for better understanding, we will describe as if separate, instead of being combined and mixed together, as they always are in practice. These three operations belong respectively to *banks of deposit, banks of discount, and banks of issue or circulation.*

I.—The sole operation of a mere *bank of deposit* would be to receive, for safe-keeping, and for convenient transfer, all sums of money deposited by individuals. Money would thus be better secured from wear and waste, from thieves and from fire; and guarded far more cheaply, as one house and one guardian would do the duty for hundreds or thousands of individuals. This alone would be an important service to each depositor, and, in the aggregate, a great benefit to the public interest. Another important benefit would be, that of facilitating payments between individuals by the use of checks, which is merely transferring a credit for a certain amount of money deposited, from the account of the payer to that of the person to be paid. To make all the cash payments of a commercial city by actually counting and delivering so much money, would alone require much time and trouble, and some risk of loss. But by using checks drawn on deposits in banks, so far as convenient and preferable, not one quarter of the trouble, time, and risk is requisite, nor the handling and counting of one tenth of the amount. Still greater is the benefit when the payment is to be transmitted to a distant creditor. A check for the amount can be conveyed more easily and cheaply than the amount of money; and should the check miscarry on the way, no loss will be sustained.

II.—A *bank of discount* is formed (whether by one or a few individuals, or numerous stockholders incorporated as a banking company,) to make a profit by discounting (for the interest) notes of individuals, due in a short time, for a previous business transaction between the debtor and creditor, and which notes were given for a valuable consideration. Thus A, a tradesman or mechanic, who, for want of capital, needs early payments to be enabled to carry on his business, would sell commodities, worth say \$100, to B, a merchant, but that B cannot pay the cash and A cannot do without it. The bank of discount serves to remove the difficulty, and to be-

nefit both parties. B knows that at 60 days he can make the payment to A, either by the sale of the articles bought, or by his receipts from other sources. He therefore gives his note to A, payable at 60 days, the payment being amply secured, as of course can always be done in such a case, by every judicious and honest dealer. The bank immediately discounts B's note, for A, that is, pays him in hand the full amount except the interest for 60 days, which is retained, and constitutes the bank's profit on the transaction. A does not even lose that interest, because as much was added to his cash price, and willingly consented to by B, for the benefit of the delay of payment. Thus, A is served, by getting cash in hand, without which he could not have sold, and to obtain which he might otherwise have suffered great loss. B obtains time, without which indulgence he could not have bought; and the bank obtains interest on its capital, in the safest of all possible modes of lending money; and the public interest is served by this and every such transaction, because every legitimate and honest gain, by the exercise of the industry or use of the capital of an individual, adds to the public wealth and prosperity. This small and simple supposed transaction is an illustration of all the benefits of banks of discount, and the safe and beneficial mode in which such banks may facilitate trade and the *credit system.* The credit system might exist, and very beneficially, without the intervention of the bank. It would only be necessary, for that end, that the producer of commodities should give credit to the merchant, and the merchant also to the consumers. But this would be impracticable, in the general; and great sacrifices of prices, and losses of debts, and ruinous disorder of business and employments, would be incurred, if this kind of extended credit were attempted. Banks of discount furnish all that is wanting to facilitate trade by making the credit system safely available by all persons who *deserve to be trusted.* And if adhering to this course, it would be a very rare occurrence for a bank to sustain a loss by making a bad debt. For if the directors used any care or prudence in ascertaining that the drawer and endorsers were good, when the note was discounted, they could scarcely all fail within 60 days. And if, by any different and less safe operations, such as will be mentioned hereafter, a bank should become embarrassed, yet if it had always strictly observed this rule in discounting, it need but to retain all receipts from debtors, and, as every debt would become due, and be paid within 60 days, of course in that short time its whole capital stock would be in hand. There could not possibly be any serious "pressure" upon a bank so operating—nor even an effective "run" upon it, even if it had added to these proper and useful operations that of issuing and circulating paper money within any reasonable bounds.

But this system of discounting notes, given for *real purchases* of commodities, and to be paid at a certain fixed and early time, though it was the designed and is the only legitimate operation of banks of discount, has been entirely departed from, in almost all the transactions called "discounting" by the banks of this country. Notes are generally drawn, not to pay for an actual consideration, and property transferred of equal value, but are merely fictitious pretences of such trans-

actions, made merely to obtain loans, perhaps to pay debts already incurred, and the proceeds spent, or to get money to be spent. The drawer does not owe the amount to the endorser who obtains the discounting of the note; the arrangement of their names is usually a mere fiction, known as such to the bank and to every body, made to obtain a loan, by aid of the security of the endorser—and which would be a fraud, except that the procedure is perfectly understood and encouraged by the bank. Further—those who thus borrow money are rarely ready to repay it in 60 days, nor is it intended to be so paid. Therefore such notes are generally “renewed” every 60 days, until the bank needs and insists upon repayment. And thus the bank, instead of discounting real notes, drawn for valuable consideration, and for purposes of trade, and to be paid at maturity, is in fact making loans upon long and uncertain times, to borrowers for any objects whatever. It is easy enough to see, even if looking to the interest of the bank alone, that it thus must soon lose all immediate or early control of its capital, and must run great risk of forming bad debts; and, instead of facilitating trade and aiding real business, that the bank has become a loan-office (if not a usury office,) and its capital absorbed by men who are already in debt, or who, by this facility for forming debts will be led on to extravagance, hazardous adventure, and ultimately perhaps to ruin. Such is the process, and such are the means by which many men are ruined by bank “accommodation,” and by which course, also, banks lose greatly in the debts of such ruined and insolvent debtors.

But let us return from the actual and general abuses and corruption of the system, to the bank of discount operating legitimately and properly, as at first designed to operate.

A bank of deposits, simply, however beneficial, could yield no profit, as it would have no source of income. The depositors, however, could afford to pay something for the safe-keeping of their money, and the facilities for transferring it. And that is done, beneficially to all parties, by the two distinct operations of receiving and transferring deposits, and of making discounts, being always carried on by the same bank. The bank then has the use of the depositors' money, under the obligation of repaying it whenever called for, (or otherwise at such notice as may be agreed upon,) as compensation for taking care of it; and by adding the use of the amount of unemployed deposits to its capital stock, for discounting notes, of course the profit of the bank will be so much increased, without injury to the depositors. Indeed, by thus employing the capital which would otherwise lie idle and useless, whether in the various proprietors' desks, or in a mere bank of deposits, the trade and the productive wealth of the country will be benefited and increased, by thus drawing from what would have been otherwise a totally barren and unproductive source.

So far, on our supposition, every thing has worked rightly, and every interest concerned has been benefited by the combined operations of the bank of deposits and of discount. It is true that after the union of the two banks, or of these two operations, there is now for the first time some risk; and the managers should take care not to

incur heavier obligations than they can be sure to meet promptly. If the deposits are to be paid on demand, then a considerable proportion of the deposited money must be kept on hand idle for the purpose of meeting, with absolute certainty, all such uncertain demands. The directors of a bank will soon learn what is a sufficient proportion for this purpose; and if (for example) the average amount of deposits is \$40,000, and it is found that \$10,000 retained will serve to meet all checks from depositors, then \$30,000 of the deposits may be safely used for discounting notes, and the interest thereof will go to increase the other profits of the bank. If the deposits are not made gratuitously, as supposed above, and as is usual with banks, but a lower rate of interest is allowed thereon to each depositor, as by the savings banks, then a short but sufficient time of notice is given by the depositor before drawing. This time of notice secures the bank from unlooked for demands; and thus it may, as the savings banks do, safely and usefully discount to the amount of the whole of the deposits as well as of their original capital stock. And in whichever of these two ways deposits are made and drawn, (according to the rule established for the bank,) so long as the discounts are properly made, every thing will be safe, and every operation of the bank will be beneficial to all parties, and to the public. And if these were the only banking operations, they could not be too greatly extended for the public good; and as long as such operations were demanded for the purposes of trade, the profits thereof to the banks would be fully equal to any other equally safe and secure investments of capital.

It may perhaps be a novel announcement to many persons, that there are already many banks in the United States, and even in Virginia, strictly of this excellent character and mode of operation. The various savings' institutions, if acting honestly and according to their charters, are precisely banks of deposit and discount, and nothing else. And though they pay 5 per cent. for all deposits, after 10 days continuance, and require but a week's notice to return deposits when wanted, these banks are quite profitable to the stockholders, and have been far more so for the last few years, than the great and rich institutions to which the name of “bank” is exclusively applied. And here we may pause, and ask of all who are well informed on the subject, and who have no interest to be served by the abuses and the frauds of the general banking system, why all banks might not beneficially, and profitably for their stockholders and the public, be conducted on precisely the same principles as are the savings' banks?\*

The savings' banks are indeed very small con-

\* The Mechanics' Savings Society of Petersburg was established, and has been in operation since April, 1837, which is precisely the time the most disastrous to banks since 1817. Yet this humble institution has kept all its capital stock and deposits constantly employed in discounting, and has made profits equal to 10 per cent. per annum, on its stock, without having yet lost a dollar, or made a doubtful debt. This shows the happy results of legitimate, prudent and honest banking; as the course of the banks which issue paper money, through that same time, and their present prostrate condition, show the results of the illegitimate and fraudulent banking system.

cerns, each having but a small capital, few stockholders, and operating on so small a scale, and so quietly, that their existence is scarcely known by half the public. It may, therefore, seem even ridiculous to assimilate to these the operations of the great and privileged, and monopoly-pampered banking institutions, which have so long formed the most powerful interest in this country, and which now occupy the attention of every individual, and agitate the whole confederacy, by the magnitude of their operations and their power, and by the baneful effects of both. But, inconsiderable as may be the operations of the savings' banks, it should be remembered that they have been established, have proved successful, and have been continually growing in number, in wealth, and in extent of operations, in the face of, and under the opposing influence of the great banks, endowed by law with exclusive privileges and immunities, and guarded by law from all dangers, and penalties of misconduct—while the poor and weak savings' banks have had no privilege whatever, except a mere act of incorporation. Yet these are constantly growing richer and stronger, while the highly privileged banks have been becoming poorer and weaker—and would sink at once into bankruptcy, and suffer its deserved penalties, but for the government stepping in between them and their creditors, to protect the banks in their dishonest failure to comply with their legal as well as moral obligations.

(To be continued.)

#### ON OIL DREGS AS MANURE.

From the London Farmer's Magazine.

In the present day a great deal is said about various kinds of manure, but that certainly must be the best which makes the land most productive. I have tried various kinds, but I find none to answer so well as oil dregs; I procured of Messrs. Wake and Officer, of Hull, a quantity last spring, to drill in with turnips; I put on about 1½ cwt. per acre, with about 6 qrs. of ashes, and I find them to be much better than those drilled in with bones; in fact, they are the best piece of turnips I ever had, and there is none better in the neighborhood. I have drilled about 2 cwt. per acre in with my wheat; how it will answer remains yet to be proved. As several farmers have tried oil dregs as a manure, perhaps this will draw from the pen of some one more able than myself some remarks on the subject.

I am, sir, yours,

A CONSTANT READER.

N. B. The cost of the dregs was three guineas per ton.

#### PRICKLY COMFREY.

From the Journal of the Royal Agricultural Society.

Sir,—Allow me to inquire through the medium of your magazine, whether any of your readers have tried the prickly comfrey (*symphytum aspernum*) for soiling, on such a scale as to be able to give any information as to how it will answer for that purpose? I have a few plants of it, and find it exceedingly productive, having cut 14 lbs. of green food at a time from one root; and

I know of no plant that would answer so well, if cattle would like it, and thrive upon it.

I have no doubt that on good land it would produce 40 tons per acre per annum, with little or no expense in the culture; but I should like to know how cattle would do upon it before giving up much ground to it. They do not appear to be fond of it, but that may be owing to not having enough to give it a fair trial; as many sorts of food are not eaten by cattle readily at first, which they are fond of when used to. There appears to be a large quantity of mucilage in the plant, from which I should suppose it would be nutritious. Any information from any one who grows enough to keep stock upon it for any length of time, will be thankfully received.

For the Farmers' Register.

#### TO THE FARMERS AND PLANTERS OF VIRGINIA.

April 8th, 1841.

*Friends and brethren*—Will you permit one of your own fraternity, without deeming him obtrusive, to solicit your attention to a subject deeply interesting, not only to our own class, but to every other in the community, since *their* prosperity is so intimately connected with and dependent upon *ours*, that neither can permanently prosper unless *we* do so—at least in the aggregate. The subject to which I allude is, the establishment, at the city of Washington, of a National Society of Agriculture.

To such of you as are conversant with the history of this vital art, both in our own and other countries, it is needless to dwell long on the well known fact, that there is not now a civilized country upon earth, *except our own*, but what has had, for years past, either such a society, or some similar institution. It is equally well known, that the improvement of each nation in all the various branches of husbandry, has been almost stationary for centuries before the establishment of such institutions, and rapid thereafter, beyond what any one could have imagined to be possible. Even in China, a country which we, in our self-imputed wisdom, deem almost barbarous, agriculture has always been fostered by the government, and held in the highest honor, ever since there was any authentic history of the country. Are our people and country so entirely different from all others in the world, that *we* can prosper without any resort to the means which every other civilized nation has deemed essential to their welfare? I confidently think not; and, with your permission, I will proceed to offer a few reasons to prove that no country whatever is more in need of a national society of agriculture than our own, if indeed there be any that require it so much.

In addition to those general arguments in favor of such an institution, which apply to every country, there are some peculiarly applicable to our own, that seem to me unanswerable, and which I beg leave respectfully to state. Certain causes which have a strong tendency to destroy our heretofore happy union have long been operating among us; and, I deeply regret to say, have manifestly been on the increase for some years past, so that it is now quite common to hear men talk—

ing familiarly of disunion, whereas it was once considered a sort of treason even to speak of it as a possible event. But this most happy state of things no longer exists. Demons in human shape, whose inmost souls are cankered with lawless ambition, and reckless fanatics, with too little sense to perceive the fatal tendency of their opinions and actions, have been indefatigably engaged in disseminating sectional jealousies and animosities throughout the United States; and the success of these diabolical efforts has been far greater than could well have been anticipated. They have, in fact, most fearfully disturbed that harmony and good will which might have bound us inseparably together, as long as time shall last, had the same efforts been made to strengthen, as have been made to sever those ties of friendship and brotherly love, upon the preservation of which the peace, the prosperity, and the happiness of the American people most unquestionably depend. To annihilate, if possible, these baneful elements of discord, or at least to neutralize them, *ought* to be the paramount duty of our national legislature. But, alas! the members themselves, or rather a considerable portion of them are deeply infected with the deadly poison of disunion, and, of course, appear to have no other object in meeting but to aggravate all the causes of sectional animosities and dissensions, by making party questions and quarrels of almost every subject of discussion that comes before them. This has so often happened of late years, that it is by no means uncommon in these times to hear Congress Hall stigmatised with that most disgraceful, but not unjustly bestowed, nickname, "*bear-garden*." All the consequences of such shameful conduct are bad enough; but the worst of them is, that the hostile feelings thus generated by those misrepresentatives of the people, are carried back by them, or transmitted through their vile party-newspapers, even to the extremities of our union, and multitudes of the people thereof have become so deeply infected with them, as to look upon each other as little better than natural enemies.

If this deadly poison has not already reached the heart's core of our body politic, I beseech you to consider well, whether there is any thing better calculated to stop, or, at least, to mitigate its fatal progress, than a national society of agriculture. This would annually collect, from the remotest states of our confederacy, many of the yeomanry of the land—the very bone and sinew of our country—who, being drawn together by a common interest, and without any possible cause of quarrel, would very soon learn that they had been most grossly misrepresented to each other, and would part, after each meeting, with a desire continually increasing to meet again. All would learn something new to them by such intercommunication; and the professional benefits which each would derive from it would so increase their mutual good will, would so warm their hearts towards each other, that the fraternal regard of the farmers and planters of our country—who fortunately yet constitute a vast majority of our whole population—would continue to "grow with their growth, and strengthen with their strength," in defiance of all the attempts which could be made to destroy it. And the incarnate devils, who are now laboring so hard to accomplish objects which, if attained, would inevitably dissolve our union, would soon

fall into that utter contempt and detestation which their infernal purposes most justly deserve.

And now, my friends, if you approve of the foregoing suggestions, will you not give to the friends of a national society of agriculture some cause to hope for your co-operation in the attempt to establish one at the city of Washington? A meeting for the purpose will probably be held during the extra session of congress, of which due notice will be given, if there is a probability of effecting it. And if only *one* person would attend from each congressional district, or *one or two* from each of our agricultural societies, (to the members of which I particularly appeal,) I have no doubt that a large assemblage, friendly to the object, might easily be convened; for a similar appeal will be made to the agriculturists of the other states, many of whom have already manifested a strong desire to form such a national institution. Thousands of our citizens, I believe, would hail it, not only as the harbinger of rapid improvement in all the different branches of husbandry, but as the peace-maker that would finally exterminate all sectional jealousies and animosities; every element of popular dissension; and would unite in one perpetual league of concord and amity all the different states of our union.

Possibly I may ascribe to a national society of agriculture more power than it could possibly acquire, more extensive influence than it could ever possess. But this self-deception, if indeed it be one, can do no imaginable harm either to my country or myself. I will, therefore, continue to cherish it, and will still hope to witness the trial of such a society before I die. Should such trial be made, and fail, I will then, but *not until then*, acknowledge my error.

On this subject, of a national society of agriculture, and the duty of congress to promote some such establishment, there are some arguments so powerful and conclusive in a late address of Chilton Allan, Esq., the patriotic president of the State Agricultural Society of Kentucky, that I could wish to see them republished in every agricultural paper in the United States; for I have read nothing so well calculated to carry conviction to every mind. The man who could read them, and remain unconvinced, must have an intellect very differently constituted from any thing that I can imagine.

Before I conclude, I must beg our friend Ruffin to tell us what *he* thinks of the foregoing project. A few favorable words from him would greatly encourage the efforts of many others, as well as the hopes and exertions of your, and his old friend,

JAMES M. GARRETT.

P. S. If any of the editors of our political journals are friendly to the establishment of a national society of agriculture, I hereby respectfully ask them to republish this communication, or to give us something of their own, which I should much prefer.

Our esteemed correspondent rates our influence and recommendation at much too high a value; but, whether worth any thing or not, our best wishes go for the success of his plan and proposal. But we confess our want of confidence,

may, our despair, as to our government, state or federal, doing any thing for agriculture. Further, we cannot believe our own class, the agricultural interest, could have enough of zeal, public spirit (or even enlightened self-interest,) and energy to perform their part in the great and important work proposed. It might be easy enough to assemble enough individuals at Washington to form a sufficiently numerous "National Agricultural Society;" but, we fear, it would be impossible to induce the proper men to go, and especially from the remote parts of the United States. Moreover, if a body, as well constituted as could be reasonably hoped for, could be assembled for this purpose in Washington, we doubt whether the novel attractions and political excitement of the place would not divert the attention of many of the most disinterested and independent members from their designed labors; and taking the whole body, there would probably be more exertion made by members of the society in using the opportunity for seeking office, or other private benefits to themselves individually from the public purse, than to promote the interest of agriculture and the common weal. If the individuals would not so act, they would form a rare exception to the general course of things in the corrupt political atmosphere of the city of Washington.

We have not examined the question of the constitutional power of the general government to aid the agricultural interest and improvement in this mode, and therefore do not mean to express an opinion thereon. We would readily publish the argument of the subject, from the address of Chilton Allan, esq., but have mislaid our copy. But it is not any constitutional obstacle that will prevent the action of congress for this beneficial object. If there were no such objection, any favored individual could more easily obtain money for some useless job or merely nominal public service, and given solely for his private emolument than the same amount would be appropriated for the most important services to agriculture. Thus, as one example among hundreds, that scientific quack and empty pretender, Featherstonhaugh, though a foreigner, obtained from congress for two years \$5000 a year, upon the pretence of geological surveys in the North-Western territories, of which the plan was doubtless devised by himself, and solely for his private benefit. The service was performed by his making a pleasure excursion in a couple of summer months, and the writing a report thereof, (to be published at the public expense,) which report consisted principally of loose generalities, and was more like an introductory lecture of a professor of geology, than presenting precise results of laborious and accurate field investigation.

This fat sop thus dispensed by favor, also enabled the recipient to assume and usurp impudently the title of "Geologist of the United States;" and the reputation thereby stolen no doubt helped him subsequently to the very important appointment by the English government to survey the disputed boundary line, and by which he has been enabled to go far towards embroiling the two governments in war. It is to such applicants as these, who are sufficiently urgent and patient, and truckling enough to the money dispensers, that appropriations are readily made by government—and not to such public objects as the encouragement and promotion of agriculture. The Smithsonian fund will be wasted by congress in jobs for private benefit, just as has already been done with a very large part of the great general education fund bequeathed to the city of Philadelphia.\*

ED. F. R.

#### REMARKS ON THE USE OF BONES, AS MANURE, AND THE PROGRESS OF THE IMPROVEMENT.

From the Farmer's Magazine.

We shall briefly refer to this substance as being one of those fertilizers which have more recently been brought under the notice of agriculturists, not however with the intention of entering into its merits as a manure, for these are manifest, and already well understood throughout the country. Our observations will therefore, in a great measure, be confined to the circumstances attending the introduction of bones, and the difficulties which presented themselves before the agricultural community could be made aware of the advantages resulting from their adoption, affording, as it does, another powerful argument in favor of having a general centre of reference for the purpose of solving any problematical question, and disseminating the knowledge of it. When potatoes, turnips, clover, &c., were first introduced into this country, there were few, if any, agricultural associations in existence, whether local or otherwise, and many circumstances might be brought forward in extenuation of the slow progress which these made at that time before their cultivation was generally adopted; but at the comparatively recent period when bones were introduced, agricultural associations abounded in almost every district, and we therefore cannot reconcile the laxity displayed by farmers in adopting so important an auxiliary in their management, without being convinced of the utter inefficiency of these associations as at present

\* After the above had been delivered to the printer, we saw in the Edgefield Advertiser the following statement. If correct, the Smithsonian fund is already disposed of. After speaking of the sinking of the Girard bequest in the United States Bank stock, the writer proceeds:

"We hear that the Smithsonian legacy is in a similar condition, having been invested, under the influence of Col. Johnson, in Arkansas stocks, which are worth about as much as continental money."

constituted, to bring any system into notice, so that its operation may be simultaneous and generally beneficial. It was only about thirty years since, that the value of bones began to be discovered in this country, and at that period, and for many years afterwards, they were only partially known in a few counties. The effects, however, produced by the bone system of management have been wonderful; in short, this important article has been the means of bringing more waste land into cultivation than perhaps any other substance which has ever been brought under the notice of agriculturists.

But let us now inquire how this great change was brought about, and how long this system was pursued, by a few isolated individuals, before its importance was generally known and appreciated. The time is not so far distant, but that many individuals can remember, when bones were broken with the hammer in the counties of Lincoln and Nottingham, and put into the ground in very large pieces, at the rate of seventy to eighty bushels an acre. In 1812, the bone-crusher from Nottingham might have been seen with a saucer in one hand, showing his half-inch bones, and in the other a turnip, as a specimen of their fertilizing powers, at the same time entreating the farmers only to make a fair trial of them; subsequently they were drilled in with the seed, the turnips, at the rate of from twenty to twenty-five bushels an acre, while some of the higher managers put in forty bushels per acre. The benefits resulting from using bones were, however, well understood for many years in several counties in England, before the practice found its way into Scotland; and although a few individual farmers may have adopted the system from observing its advantages, yet we are mainly indebted to the mercantile body for their final introduction and extended use in Scotland. For not only did our merchants commission the bones at their own cost and risk, but it was only by using the most pressing solicitations, and the greatest perseverance, that they were enabled to get the generality of farmers to comprehend their advantages, or even to give them a patient trial; and it is only within the last few years that the demand has in any way been commensurate to the benefits derivable from their use, in connexion with the extension and advantages of the sheep system of husbandry. Now, when we consider the length of time that was allowed to transpire before the beneficial effect of this highly important manure was made manifest in Scotland, even long after its advantages were known and appreciated in England, we cannot but regret that improvements of such a nature should be left to the mere chance or accident; or that the best interests of agriculture should be sacrificed and retarded for so many years, merely from the want of co-operation in that body whose interests it would tend most to advance. But this is not a solitary instance that might be brought forward in condemnation of our present inefficient means of co-operating for the diffusion of agricultural improvements; on the contrary, it will only be necessary to direct attention to rape-cake, saltpetre, nitrate of soda, soot, &c., &c., to show the partial manner in which such substances are understood by a few individuals, before they become of general import to the agricultural community. It therefore cannot but appear evident, even to the minds of the most indifferent, that there is some-

thing in our present system which imperiously demands an immediate and most searching inquiry.

#### MONTHLY COMMERCIAL REPORT.

For the Farmers' Register.

There is nothing of importance to notice in the business of the present month. A slight advance has taken place in tobacco and cotton—in the former article, owing to large sales in England; and in the latter, from the falling off of the receipts, compared with last year. In flour and grain there is no change, and the export demand is small.

Money matters and exchanges present little variation. Stocks of all kinds are dull, and most of them unsaleable. X.

April 27th., 1841.

#### ON THE VALUE OF FIELD PEAS AS A CROP, AND TO PREVENT INJURY TO STOCK FEEDING THEREON.

To the Editor of the Farmers' Register.

*Hancock county, Ga., April 13th, 1841.*

Sir:—I have for several years placed a high value on the pea crop, as peculiarly adapted to our agriculture and wants in this section. It appears to me more fertilizing than any green crop we grow, grows taller on poor land, is easily planted, does not hinder us much during the busy season, and in every way, is a fine accompaniment to a corn crop, and furnishes a fine amount of fall and winter provender for stock (which we are generally much wanting;) but I have heretofore thought it left my stock, particularly my hogs, in an unhealthy condition, and on that account less valuable than it at first promised.

I have used much inquiry and thought to find a remedy for this defect, and hope I have succeeded; but it will be necessary to test the remedy more fully, and on that account I send it to you, if you think it worthy, for the use of your subscribers.

Last fall I was conversing on that subject with a very honest practical farmer. He told me for a number of years he had used the pea crop in fattening the most of his stock, that they thrived as kindly on that as on corn, and that none were injured by it; and he gave me his plan. He prepared in the pea field a large tight trough, and kept it at all times well supplied with salt and ashes dissolved in water. He never turned hungry stock into the field, only turning in his horses, cows and fattening hogs. I tried it last season, and the result was precisely as he informed me; they all appeared fond of drinking out of the trough, and were healthy, and did well after they were turned off on other food. I used the precaution to turn my horses and cows off one or two days each week, and I would suggest that horses or oxen should never be put to hard work while filled with peas. Nor would I suffer my stock hogs to feed on them; they are I think more unhealthy for young than older hogs.

I cannot close this without giving you a hearty "well done" for your bank comments in the Farmers' Register for March, and the political essays in the second number of the 'Southern Magazine.'

J. S. WHITTEN.



## MAKING HAY.

From the New Genesee Farmer.

The old proverb says, "Make hay when the sun shines;" but there is something else besides sunshine necessary to make good hay. The grass must be cut when it is mature, or the animals that have to eat it will have a hard bargain.

Many people, including some good farmers, judge of the quality of common hay by its greenness and brightness. It is a fallacious test. We have been feeding out, for a week or two, (3 mo. 8,) hay that was as bright as any body could desire, well made without rain, and kept in the barn. It was a mixture of red-top and timothy, cut about midsummer on account of clearing the enclosure for the cattle; and which, had it been left to stand one month longer, would have made excellent hay. As it was, the cattle ate reluctantly, and evidently with some loss of flesh. It is now a pleasure to see with what eagerness they take hold of hay that was cut afterwards.

There is a great difference between the *natural* and *artificial grasses*. The former, including red-top and timothy, yield their nutriment principally from the *stem*; and like the sugar cane and other plants of the same *natural order*, should be suffered to stand till the *stems* are mature. On the contrary, the leaves of the *artificial grasses*, including the clovers and lucerne, are the most valuable parts; and for this reason, these kinds should be cut when the *leaves* are in the most perfect state.

## VALUE OF THE ROHAN POTATO.

For the Farmers' Register.

After a trial of several years, the value of the Rohan potato is fully established. And judging from the statements that have been published in the northern papers, it appears to be equally as productive in Virginia, as elsewhere. A neighbor of mine last year raised a bushel and a half from one tuber; and quite a large crop from a small quantity of seed. My own crop exceeded by far any thing that I have ever obtained from other varieties of the potato. From less than half a bushel of seed, and from a very inconsiderable portion of my garden, I made potatoes enough for almost daily use in my family, during the fall, winter and early part of spring, besides reserving an ample supply for planting. And this was done without any extra care or cultivation.

My object in advertising to the Rohan potato now, is to express the belief that it is much better adapted than any other kind, for culture in this climate. In eastern Virginia, the Irish potato has never been cultivated with success, farther than as a vegetable for early use. A square in the garden is perhaps as much ground as is usually occupied by it. We buy our potatoes for winter use, and even for seed, from the northern supply which is brought into our markets. With the aid of the Rohan, it is in the power of every farmer to fully supply his own table, and to raise extensively for his stock, or for market. The quantity of potatoes annually brought into this and other southern states from the north is immense; and the prices for a series of years would probably average at least 60 or 70 cents per bushel. Now, when there is a growing disposition to cultivate root crops, it is respectfully suggested

that the Rohan has claims which should not be overlooked. It may be made the means of rendering us less dependent on others for so valuable a vegetable; and by the abundance which it will supply, of contributing materially to the wants of the farmer—who should be no more under the necessity of buying potatoes than meat or corn.

In respect to quality, the Rohan is inferior to no potato that is cultivated. If it has less delicacy of flavor than the "Mercer," it is equally farinaceous, and has more of richness.

T. S. PLEASANTS.

## SUMMARY OF NEWS.

Reprinted from the Weekly Farmers' Register.

Saturday, April 3, 1841.

The new acting governor of Virginia, Mr. Patton, ordered to be delivered to the governor of New York, the counterfeiter Curry, who had fled from New York to Virginia, and had been demanded by the governor of New York. Thus Virginia fully performs to New York that constitutional reciprocal duty which New York refused to Virginia. The latter occurrences exhibit still more strongly the wrong of the earlier, in the slave-stealing case; and also the firm resolve of Virginia to do right, as well as to suffer no wrong. Even the differences of opinion as to the propriety of delivering up Curry, and the results, set forth and strengthen the cause of Virginia; and they are in no respect to be regretted, except as being the cause of Gov. Gilmer's resignation, which is a matter of great and almost universal regret. The rights, interests, and even political existence of Virginia and the other southern states, are at stake in the main controversy with New York—and if not now maintained, will be now, and for ever, left undefended and defenceless.

A new military projectile (the "Death dealer") of tremendously destructive power, has been discovered, and recently tried satisfactorily in England.

Accounts continue to be received of great destruction by the floods in the South. The Savannah Georgian says, "that the flood did immense damage to the planters in the vicinity of the Oconee, Ocmulgee and Ogechee rivers. On Commissioners' creek, ten mills have been carried away. Many other mills on other streams have been swept off. Numbers of cattle have been drowned. On one island in the Oconee 700 head of cattle were destroyed, and several persons have lost 100 head. Valuable lands on the rivers have been much impaired in value, if not totally destroyed, by the washing of sand over the surface."

Sixty-five Kansas took advantage recently of the absence of the Pawnee warriors, entered the encampment and massacred all but 11 of the women and children found in it. This massacre will be a signal for a fierce war between the Pawnees and Kansas.—*St. Louis Rep.*

"The government of Bolivia has received intelligence that Mr. William Wheelwright, of the United States, has arrived in the Pacific with a certain number of steamboats to establish a more certain and rapid communication between the ports of Chile, Bolivia, Peru, Ecuador, and New Granada, and with Europe, by the isthmus of Panama, and that an exclusive privilege has been granted to him for this purpose by the government of Peru.

Dr. Dyott, who is confined in the penitentiary at Philadelphia, for his fraudulent banking operations, is represented as being in a remarkable state of contentment and cheerfulness—congratulating himself that "in this season of pecuniary distress, he has no notes to meet, and none of that sleepless solicitude he once had about *pay-day*." It is a great pity that all the other unfortunate wholesale swindlers, through banks and paper money, were not put in the same place (on-

larged to accommodate so great a number) where their worthy brother has found so much ease. But if Dr. Dyott's bank had held out until now, he might have been made easy without going to the penitentiary; for now there is no "pay-day" for banks, except in paper promises, which of course Dr. Dyott's, as all other banks, could furnish in any desired quantity.

Peter Robinson, has been convicted and sentenced to death, for the mysterious and remarkable murder of Mr. Suydam, at New Brunswick, N. J.

The recent elections at Lower Canada have been attended with much turbulence and riot, and some destruction of life.

A large quantity of lead, the products of Wythe county, Virginia, has been sent to Richmond.

The congress of Texas has passed an act that no sale of slaves shall be made under execution, unless for defalcation to the Texian government. This is offering a high bounty for the emigration, from the United States, of bankrupt and fraudulent debtors, who hold or can acquire possession of slaves.

A loan for the Texian Government has been obtained in France.

The Homer, one of the largest steamers on the Mississippi, sunk on the 16th, with a valuable cargo, part of which was 500 tons of rail-road iron.

The president of the United States, has been dangerously ill with inflammation of the lungs. The Washington papers of the 2d. report that he is better.

United States Bank stock has lately been sold as low as 15¢.

*Saturday, April 10, 1841.*

The brig Richmond, of Salem, has been searched by a British vessel of war. This is the fifth Salem vessel that has been so treated.

Alonzo F. Weed, ex-president of the swindling Bank of Millington, has been arrested in New York on the charge of having embezzled upwards of \$10,000 of the funds of that institution.

The State Bank at Macon, and all the banks of Columbus, Georgia, (except the Phenix,) and the Rail-Road Banks and some others, have acknowledged their suspension of specie-payments.

Gen. William H. Harrison, President of the United State, died on the morning of the 4th. inst. His disease was inflammation of the lungs, of which the commencement had been very recent, and the progress rapid to its fatal termination. For various considerations, no other death, nor perhaps any other isolated event, could have occurred which would have caused so much regret and disappointment to a very large proportion of the people of this country.

The late Vice-President Tyler, now President of the United States, (and possessing the full power of his predecessor, and for the full term, save the one month of the passed administration,) now assumes the station under entirely novel, and also the most favorable circumstances. Succeeding to the chief magistracy by virtue of the constitutional provision for a vacancy caused by death, President Tyler owes his exaltation not to election for this office, nor to the usual means for securing a presidential election—but to chance—and the selection, and the fitness of the individual to perform the duties of the office, are not the worse on that account, but the reverse. Owing to this before unprecedented circumstance, he has come into power suddenly and unexpectedly, and free from any pledge or promise to, or bargain with any person or party. Being thus entirely unfettered and uncontrolled, he is free to do what he deems right, and the best for his country in all respects. His course may be a glorious one, and must be, unless he should throw away the most favorable opportunity that has ever been offered to a president, since the accession of Jefferson. President Tyler is now in the only possible condition of incumbency in which a chief magistrate is bound only by his duty to his country, his oath of office, and

his own previously avowed and well-known political principles. John Tyler has always professed, and gloried in professing, to be a *state-rights republican* of the "straitest sect." He has been one of those who contended for the strict construction of the federal constitution, and strictly limited powers of the federal government. And to an adherence to the same course, in his now exalted station, he is pledged by every act and profession of his whole political life. This general proposition includes several minor, but important, particulars, in regard to which the public mind has been much agitated, and the hopes of some and the fears of others strongly excited. Whether these hopes and fears were before well-founded or not, there is no ground for them now. President Tyler cannot and will not sustain any measure that is not fully authorized by the strict construction of federal powers.

The trial of McLeod has been continued to the next term.

The British Queen steamer, which had been expected for a week, arrived at New York on the 4th, after a stormy passage of 24½ days, bringing English accounts to March 10th, of great interest.

A war panic, and much excitement had been produced by the McLeod affair, and the warlike tone of the report of the committee of foreign relations of Congress—and a stock panic also, made worse by the news of the bankruptcy of the United States Bank.

A British squadron of ten ships of the line had been ordered to the coast of America, and three more battalions of infantry to Halifax.

Cotton had advanced at Liverpool a farthing per pound, owing mainly to the fear of war with the United States.

News from China to December 18th—to which time nothing more of any importance had been done by the British arms or negotiators; and the Chinese continued to delay the negotiation by shuffling and excuses.

Charles F. Mitchell, a noted member of Congress from the State of New York last session, and, more recently, a noted office hunter, has committed sundry forgeries of large amount, and moved off to Texas.

On the 6th inst. the bank authorities of Richmond "resolved" and formally notified the public of the re-suspension of specie payments of all the banks in Virginia. Thus has ended, as we predicted, the pretended resumption, which has been the most ridiculous and contemptible and disreputable farce that has ever been played by such grave and dignified performers. The whole bank proceedings in Virginia, for the last two months, would serve as an amusing and laughable hoax, if the joke were not too serious in its effects on the cheated and pillaged community.

The Richmond Whig, when reporting and applauding this re-suspension, adds, "We hope now that the banks will consider suspension as *indefinite*—that is, that they will not pretend to the power of foreknowledge, and designate a period when they can resume, which depends upon so many contingent circumstances—and that they will cease to grind the community to prepare for an event [the resumption of payments] which may not and probably cannot occur, wisely, for several years." We are confident that the suspension will not only be for a time "*indefinite*," but that it will last as long as any of these banks will last, and even the swindling banking system of Virginia itself.

President Tyler's opinion of the banking system of this country, was expressed, years ago, as follows, in the congress of the United States. What was then prophecy, has now become history. "For one, I enter my protest against the banking system as conducted in this country; a system not to be supported by any correct principle of political economy. A gross delusion—the dream of a visionary—a system

that has done more to corrupt the morals of society than any thing else—which has introduced a struggle for wealth instead of the honorable struggle which governs the actions of a patriot, and makes ambition virtue—which has made the husbandman spurn his cottage, and introduced a spirit of luxury at variance with the simplicity of our institutions.”

The “patroon war” of New York has been renewed; 300 of the Van Rensselaer tenants have refused to pay rent.

The Miller’s Bank of Clyde (N. Y.) has been wound up by due course of law, its securities and funds sold out, and the bill holders will get 90 cents in the dollar. The stockholders, we presume, will get nothing.

*Saturday, April 17, 1841.*

The Acadia steam ship arrived at Boston on the 7th, bringing accounts 9 days later from Liverpool, to the 19th March. No important news. From the European (of Liverpool) of the 19th we gather the following facts or inferences.

The expectation of war with the United States, had somewhat subsided, owing to more full consideration of the grounds of recent apprehension; but preparations for it were not the less going on. Every voice heard deprecates and opposes war, but at the same time all parties seem ready to meet it, if required by the execution of McLeod. The prospect of war had already operated very injuriously to the interests of the manufacturing districts. In consequence of the fear of disarrangements of markets, the cotton manufacturers at Manchester had agreed to reduce the time of labor, by working their hands only four days in the week.

In our opinion there is but little danger of war from the most prominent subjects of dispute—the trial of McLeod, and the Maine boundary; but very great danger from the illegal system of searching American vessels, by British cruisers, recently acted upon, in the African seas; and which unjustifiable procedure seems to attract but slight notice in the United States, and none whatever in England.

The Marquis of Hertford owned stock in the United States Bank to the amount of £500,000 (nearly two and a half millions of dollars) which will be nearly all lost by its bankruptcy. European capitalists will be very cautious hereafter of vesting in American stocks.

Both the land and naval commanders of the British forces in China have been superseded—a sufficient indication of their incapacity, and the displeasure of their government. So far, the invasion of China is a failure.

Madame Restell, who has for a long time been advertising, through the New York Herald, which was of itself an outrage on public decency and morals, to sell “preventive powders,” or means to cause abortion, has at last been charged with, and is imprisoned for, an act of murder committed on a mother, when the object was merely to destroy her offspring. The gallows is too good for such a wretch, even if this last mistake had not been committed.

At the general meeting of the stockholders of the United States bank. (8th. inst.,) all respect for the late authorities, for the first time, was thrown off, and their names and acts strongly denounced. The report adopted is of course more moderate and guarded in expression, but still very severe. The resignation of the President, Dunlap, and six or eight directors, was announced to the meeting, and received with “ostreperous applause.” An exculpatory letter from the former cashier and European agent, Jaudon, was treated with signal contempt—and even the great Nicholas Biddle, and the former directors generally, were censured in the debate, in the strongest and coarsest terms, and reference made, for comparison and illustration, to Dr. Dyott’s case, and his present residence

in the penitentiary. “How are the mighty fallen!” Since, letters in defence have been published by both Biddle and Dunlap. The old saying that, “when rogues fall out, honest men recover their rights,” is certainly not true as to banks, whether the banks themselves or merely their agents be the cheats and thieves in question. But, even as to the banks, the great and legally licensed robbers of the community, we trust it is now at least true that when the rogues quarrel, honest men may learn how they had been cheated and robbed.

The bill for relieving the banks of Pennsylvania, which had passed the legislature by a bare majority, has been vetoed by the governor. We trust that now these banks will be compelled to remain confessedly bankrupt, if they are so, and to meet the penalties of bankruptcy, and all their obligations, as all individual debtors would. If the government of Virginia had not been a large partner in the banks of Virginia, the like honest and proper course would have been adopted in this state. As it is, the banks of Virginia will be protected by law in every violation of law and of honest obligation, as long as the impolitic and infamous partnership lasts, and until the existing system of fraud and pillage cannot be sustained longer. The great and only possible means for bank reform in Virginia, is to dissolve the partnership existing between the banks and the state.

The New York Herald says—

“The Virginia banks have again suspended for the relief of the people.” The following is a statement of the specie and circulation of the Bank of Virginia, before and after specie payments.

*Bank of Virginia.*

	Dec. 28, 1840.	April 5, 1841.	Decrease.
Circulation,	988,368	638,096	300,242
Specie,	296,182	262,092	33,040

*Exchange Bank, Office at Richmond.*

	Jan. 1, 1841.	April 1, 1841.	Inc.	Dec.
Loans,	650,137	650,094	—	.043
Specie,	78,748	63,709	—	15,039
Circulation,	229,975	149,465	—	80,510
Deposits	184,500	208,460	23,960	—

“The returns show that, under specie payments, a most healthy reduction of a redundant currency was going on. This loss of circulation was injuring the profits of the banks, and the speculators and directors, who owe the banks most of the loans, not being in a condition to pay up, in order to allow the process of curtailment to be carried out, the institutions came to the conclusion to stop, and actually did so, with nearly as much specie on hand as they resumed with—an increase of deposits, and a discount line quite as high as when they commenced paying specie. This is seen in the return of the Exchange Bank. Such conduct requires no comment. The people are to be cursed and taxed by an irredeemable currency, because some dozen speculators, that have possession of the funds of the Bank, cannot repay it. If the business of the Bank was perfectly under its control, its assets maturing in sound business paper, and promptly paid at maturity, it could go on until doomsday without regard to the movement of any other bank.”

*A new operation by a bank*—The last indemnifying bank law, has a new feature, designed as a pretence of penalty on banks refusing to pay their notes, and of pretended recompense to the note-holders thus deprived of their rights. This provision is, that whenever a note is presented for payment to the bank which issued it, and the payment refused, that the fact of such refusal shall be *endorsed* on the note, with the date, and signed by the cashier or some other officer of the bank; and that thereafter such endorsed notes shall bear 6 per cent. interest. Now this, whether as a penalty on the refusing bank, or compensation to the wronged bank creditor, (or note-holder,) is so poor and pitiful a remedy, that it was probably expected that no one would require its execution; and, therefore,

that, like most other legal remedies against fraudulent banking, it would be null and void. If the notes, when so endorsed, should be retained by the first holder, the transaction would simply amount to lending the notes, or obligation of the bank, to the delinquent bank itself, and for a time altogether uncertain; and that the lender may finally get 6 per cent. interest for the loan, which he could get from any other and more prompt, and responsible and trustworthy debtor, than the bank. If he puts the notes into circulation, he will get nothing by the endorsement, which would be erased as soon as it came into possession of any bank, or any bank slave. Nevertheless, we desired to see how this new requisition of law would be obeyed, as we desire every one of the few and feeble penalties imposed on the banks by law to be exacted. By a rare chance, we recently received \$900 all in notes of the Branch Exchange Bank of Petersburg. Specie was demanded for them, (as a preliminary matter of form) and, on the refusal, the endorsement directed by law was required. At the request of the Teller, the notes were left for the purpose, and called for the next day. The writing then found affixed was simply "April 10th, 1841, P. Durkin, Cashier;" and that was on the face of the note, and in such pale red ink as to be very nearly illegible, and in some cases entirely so. On one note only, black ink had been used, and which was abundantly plain. Regarding this writing as no endorsement, and, even if endorsed, as furnishing no obligation whatever, we returned the notes for the authorities to try their hands at writing again. After two days more, (which we cheerfully waited, to give abundant time for deliberate action,) we called for and again received the notes, endorsed indeed, but so illegibly in almost every case that no one can read the whole of each, and sometimes not a word, and signed by the bank runner. Now this mode of endorsing a legal obligation is clearly a refusal to endorse; and if we had chosen, or should still choose, we might exact, by law, the heavier penalty for a refusal. But, for the present, we prefer to take sufficient evidence of the signatures, and to send abroad, and especially to the country, these notable evidences of bank obligation. And, as the endorsements would not otherwise be noticed we have had printed and pasted below each endorsement, a label with the following words:

"The endorsement on this note should read thus:

"Payment refused April 10th, 1841.

JAMES BOYLE, Run."

And, according to law, it carries interest (to be paid whenever the bank shall pay the principal,) at 6 per cent. per annum. But as the writing is too pale and indistinct to be read, this printed explanation is annexed for the information of all concerned.

EDMUND RUFFIN."

We shall continue to compel the endorsement (legally or otherwise as the officers may choose) of all the notes which fall into our hands, on which the demand can be enforced; and if other individuals who are opposed to the non-specie-paying banking system, would systematically do the same, feeble as the means are, (and intended by the legislature to be so,) they would not be without important effects, in correcting both the great frauds of the system, and the little and pitiful meannesses of its practical operations.

Dr. Benjamin Drake of Cincinnati, the author of several scientific and literary works, died on the 1st.

"The book keeper of the Union Bank in Nashville, Tenn. has been arrested for stealing some eighteen or twenty thousand dollars of the notes of that bank, to which charge he has confessed himself guilty."

"Gold and silver have been rushing off to the eastern specie-paying states ever since the suspension of specie-payments in Pennsylvania, and the states south and west. Should any bill pass the legislature of this state, tolerating our suspension for a period, its effect will be to deprive the state of what specie yet remains in circulation. It is a most un-

wise policy, and those of our newspapers which think the people are in favor of it will find themselves mistaken sooner or later."—*Phil. Ledger*.

"*Gallipolis Bank*.—The present managers of this late swindling shop, report that after having redeemed more of the paper of the bank than the late officers said was in circulation, they have learned that there is still out more than \$400,000."

"The bank of Mineral Point, Wisconsin Territory, has exploded, and the managers are charged with gross misconduct in conducting its affairs. They were connected with the Gallipolis Bank's fraudulent operations."

Thomas L. Budd, book-keeper of the Union Bank of Baltimore, has been committed to prison for stealing about \$10,000 of the funds of the bank. "He has heretofore borne a good character, and was believed to be a pious Christian."

Saturday, April 24, 1841.

Publications of self-defence, mutual crimination and recrimination, continue to be made by Nicholas Biddle and the other late and present authorities of the bankrupt and now prostrate United States Bank. Each of the disputants has succeeded much better in assailing his fellows than in defending himself; and their combined evidence serves to expose, in the bank and its management, one of the most stupendous and flagitious frauds, carried on by men of the highest reputation, that has been executed since the days of the great Law and his Mississippi scheme, and the South Sea bubble.

"According to Mr. Biddle, the resumption of specie payments was a fatal blow to the United States Bank; its continued vitality depended upon a continued suspension. The Boston Courier takes up this notion, and comments upon it in the following manner: 'Ah! that fatal resumption of specie payments! The bank might have enjoyed its 'vitality' to all eternity and the day after, if its directors had not, in an evil hour, (good simple souls!) thought it best to show a disposition to be honest, and meet a few of their promises to pay. Let all bank directors take warning from this blunder of their Philadelphia cotemporaries, and never resume specie payments, if they have already suspended. If they now foolishly pay specie for their bills and notes, let them suspend at once. If they have 'vitality' enough to issue bills and post notes, which they are bound to pay only when it may suit their pleasure, they may continue 'strong and prosperous for ever.'"—*Phila. Ledger*.

The Vicksburg Sentinel of the 31st ult. says: "This city is now crowded with blacklegs. One of our principal hotels, we have learned, is literally crowded with them and their gambling apparatus." This shows that the outrage upon law, by hanging several gamblers, in Vicksburg, some years ago, has had no more benefit than mob law usually has.

A Portuguese slaver was lately carried into Rio Janeiro by the British brig of war Tower. She had 380 slaves on board, and had lost 140 on the passage!

On the recent benefit night of Fanny Elssler, the celebrated dancer, at New Orleans, the receipts for tickets were \$6,000, and the presents to her besides, in diamonds, &c., raised her profits, for that night alone, to between \$3,000 and \$10,000. Certainly the people of this country are the most gullible of all upon the face of the earth. It would be difficult to decide whether the enormous tribute of money, and even respect, paid throughout this country to this foreign dancer and "demi-rep," or the tribute paid to the banks and their authorities, presents the stronger evidence of folly and slavishness, and willingness to be robbed.

Accounts from China as late as Jan. 6th have been received, by the American ship Panama. The previous advices were to December 18. Still nothing more done, either by the British forces, or by negotiation with the Chinese authorities.

It is said in the New York papers that the newly appointed collector of that port is still "literally besieged by applicants for office," from morning till night. This is truly the age of office-seeking.

"During the past week," says the Augusta (Ga.) Chronicle, "there has been quite an animated demand for specie-paying country notes. It has resulted in some measure from the plaintiffs in execution refusing to receive the notes of suspended banks. This has been the case latterly, in different parts of the state; and Tuesday last, being sheriff's sale day, those who wished to make purchases were obliged to supply themselves with the better currency. Sales of property to some extent were made at our market house yesterday for specie-paying notes, and we were surprised to find that the sales were made at good prices." Such would be the case in Virginia, and thus a sound currency be restored, if the bank suspension were not legalized. As law is beginning to operate on the Georgia "specie-paying" banks, (that is, paying specie when forced to it,) we trust the operation will there continue.

The British ships of war continue their outrages upon American vessels. The Baltimore Sun says that "Captain Wyse, of the Leonidas, at this port from Rio de Janeiro, states that on the 16th of March, in lat. 9 30 S. long. 35 47 W. he was fired into and brought to, by the British sloop of war Rose; the boat sent on board, the papers demanded and examined, under the plea of supposition that she was a slaver. After detaining him for some time she was allowed to proceed."

It has been proposed in the New York legislature to discharge McLeod. The discussion thereupon is still going on. The conduct of the British in the affair for

which he is imprisoned, (the attack on and burning of the Caroline,) was boldly and ably defended by members in the debate. If not thus discharged, McLeod will no doubt be acquitted when tried.

The British steam ship, Columbia, arrived at Boston on the evening of the 20th, bringing accounts 15 days later—to the 4th inst. No important news.

The intelligence received from the United States had been deemed pacific, and had allayed the war excitement and feeling in England. It had also caused cotton to fall one-eighth of a penny. Flour had also fallen.

There had been a revolutionary movement in Marseilles, which had been easily and promptly put down by the police. Fourteen of the insurgents were made prisoners, and the rest were dispersed.

In New York (in consequence of the news from England) cotton fell a quarter of a cent, (April 21st.) A cargo of southern corn sold at 42½ cents. In Richmond, corn 45 to 47 cents—and small quantities have sold at 50 cents. (22d.)

From January 1 to April 1, there have been reported in the newspapers 74 murders and 63 suicides which have occurred in the United States.

"A few nights since, twelve negroes, belonging to the Rev. Wesley Adams, of Jefferson county, Florida, were burnt to death. They were all in one building, and it is supposed were suffocated, and rendered insensible, as they gave no alarm, and when the doors were opened uttered not a groan."

"We learn from the Savannah papers of Saturday, that the Planters' Bank of that city had been robbed of \$37,000."

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# THE FARMERS' REGISTER.

VOL. IX.

MAY 31, 1841.

No. 5.

EDMUND RUFFIN, EDITOR AND PROPRIETOR.

## PRIZE ESSAY.

From the Kentucky Farmer.

The undersigned have examined the essay on tobacco, submitted to them by the Kentucky State Agricultural Society, and award the premium to that signed "A. Beatty."

JOHN CALHOON,  
JOHN H. McHENRY.  
JAMES F. BUCKNER.  
THOS. TOWLES, JR.

Dec. 31, 1840.

## AN ESSAY ON THE CULTIVATION OF TOBACCO.\*

The first step in the process of tobacco culture is to make provision for an abundant supply of plants. Tobacco seed are very small, and the plants, when they first spring from the ground, grow very slowly, and would soon be smothered by weeds if not carefully guarded against. The places selected for plant beds should be such as would not be likely to produce many weeds. New ground, or that which has been long set in grass, would be best for this purpose. To guard still further against weeds, and to ensure a thrifty growth of plants, it is essential that the place in which the seed are to be sown should be burnt. A light burning with straw or other light material will not be sufficient. A good coat of brush laid upon the ground intended to be used for a plant bed, and arranged so closely as to make it burn readily, serves best for the purpose. Care must be taken also, before laying on the brush, to rake all trash from the ground, so that the heat may readily destroy the seeds of any weeds which may have been deposited there. New ground is always to be preferred for plant beds, and brush as the material for burning the ground. But if the tobacco planter have no new ground, then he must substitute grass land in its stead, and this should be well burned by having a range of logs (those which are seasoned answer best) laid along one edge of the ground intended for a plant bed, and heaped up sufficiently to make them burn readily. These must be set on fire, and after burning the ground which they cover sufficiently, they must be moved by means of hooks, to the adjacent ground not yet burnt; and so on;

\* For this essay a premium was awarded by the Agricultural Society of Kentucky. The friend to whom we were much indebted recently, for the notes to an essay on the same subject from Maryland, speaks of this one as follows:

"This essay on tobacco I consider very valuable. It is apparent, however, that the management of the crop for market is not such as would be approved amongst our best planters in Virginia. The different qualities are not separated, but are "prized" up together—short and long, rich and thin, dark and bright, are put into the same hogshead. This evidently injures the sale of the better qualities, and does not much enhance the value of the inferior."

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in succession, until the entire space intended for a plant bed is burnt. If one set of logs is not sufficient to burn a space as large as will be necessary, others must be added so as to enlarge the space, or they may be burnt at different places as may be most convenient.

Where sod ground is intended to be used, it would be advantageous to have the sod lightly skinned off with sharp hoes, before the space is burnt over.

After the ground is burnt it must stand sufficiently long to cool, and then the ashes should be carefully removed. The ground should now be dug up with hoes, to the depth of two or three inches, and so as to pulverize it as much as possible; and should be well raked with an iron tooth rake, so as to break up the soil into the most minute parts. It will now be ready for sowing the seed. It is important that this operation should be as regular as possible; and care should be taken to put the proper quantity of seed upon the ground. If sowed too thick, the plants will be so much crowded as to injure their growth. If sowed too thin, a deficiency of plant may be the consequence. A common silver table spoonful of seed will be sufficient for fifty square yards. More than that quantity should not be sowed on that space of ground. But if the ground prepared be abundant, the plants would grow more thrifty by sowing a spoonful of seed on seventy or eighty square yards. The seed allotted for a particular bed should be put into a vessel half filled with fine mould or earth, and stirred so thoroughly as to cause the seed to be equally distributed in all its parts. It should now be separated into two equal divisions. And the plant bed having been divided into convenient lands for sowing, one portion should be sowed as equally as possible in one direction, and the other portion in the same bed, in the opposite direction. The plant bed should now be well raked with an iron tooth rake, both ways, and should then be well trodden by the feet of men or boys, so as to render the loose soil firm and compact. The bed should be thinly covered over with brush to keep it moist and to protect the plants from frost. Plant beds should be prepared and sown as early in February as the weather will admit; though it will be in good time if sown any time in that month.

Tobacco requires a rich soil, and that which is new or nearly so, answers best. Next to ground which has been recently cleared, lands which have been long in grass, especially if pastured by sheep, answers best for tobacco. In preparing ground for tobacco, great care should be taken to plough it deep, and pulverize it completely. Grass land intended for tobacco, should always be ploughed the previous fall. And it is better that all kinds of land intended for that purpose, should be ploughed in time to have the benefit of the previous winter frosts. It should be kept light and free from weeds, by repeated ploughings, till near the time of planting. It should then be laid off into ridges, by a single horse plough,

(to prevent the ridges from being trodden by the off horse) from three to three and a half feet from centre to centre, according to the kind of tobacco which is intended to be planted. The ground should be crossed at the same distance, by a shovel plough or one with a double mould board. The ground will now be in a condition, requiring nothing more to be done to prepare for the planting, but to cut off the centre of the square or ridge with a broad hoe. This last operation should be performed when the plants are of sufficient size for setting, and should be made only so many at a time as there will be plants to fill the first season that happens. Plants can only be set after a rain, and much care should be taken in this operation, for if plants are well set they will grow quickly, but if badly set they will be kept back some time, and many hills will require to be replanted. This will cause much additional labor and render the crop irregular as to the time of ripening. When the crop is planted its cultivation must be carefully attended to. The first thing to be done is to see that the cut worms do not destroy the young plants. These must be sought after and destroyed. The plants must be kept free from weeds. In this operation both the plough and hoe should be used until the plants become too large to use the former without breaking the leaves. During the last ploughing, tobacco should be ploughed only during the heat of the day, when the leaves will have *wilted* and will not easily break.

Tobacco is very subject to be injured by the horn worm. This insect is very destructive, and if not destroyed will ruin the crop. The utmost care is, therefore, required from an early period of its growth, to save the tobacco crop. From the time the horn worm makes its appearance the crop should be gone over once a week till it is cut. *Topping* and *priming* are next to be attended to. The latter consists in breaking off the leaves next to the ground, which, to the number of four or five, are of no value. The number of leaves to which tobacco should be topped, varies according to the kind of tobacco raised, and the season of topping. The first topping will always admit of a greater number of leaves being left; and, in proportion as the season advances, fewer leaves should be left. The heavier kinds of tobacco are generally topped early in the season, to twelve leaves, then to ten, and still later to eight. The lighter kinds of tobacco are topped to a greater number of leaves. The above rule is only applicable to a rich soil. If the soil is light, the topping should be regulated accordingly, and fewer leaves left.

*Suckering* is a much more tedious operation. Every plant requires to be twice suckered before it is ready for cutting. The first suckers are of quick growth, and should be removed before they become large, otherwise they will not only injure the growth of the plants, but will sometimes break off the leaves in removing them.

Tobacco is usually planted from the middle of May to the last of June. And the cutting season usually commences about the middle of August, and is rarely finished until late in September. Between the planting and cutting of tobacco, the labor of attending to it is light, but very tedious. It requires more hands than any other crop, for the same number of acres; but weak hands and children can assist and do much of the work.

When it begins to ripen, stouter hands are required, though children may still aid in the subsequent operations. A little practice will enable the planter to distinguish, very readily, the ripe from the green plants. At the first cutting the former must be selected and cut, leaving the others to become ripe. When tobacco is ripe the leaves become spotted, with a greenish yellow color, and the leaves are so thick and ridged that by folding and pressing them gently between the thumb and finger, they will break or crack. But a little experience will enable the planter to determine which plants are ripe by sight alone. Tobacco must be split while standing; and such hands as can readily distinguish between the ripe and green plants, should be employed in the splitting process. The most convenient knife for splitting tobacco is in form somewhat like a broad chisel, except that the blade should be very thin. It should be three and a half inches wide, and of the same length, having attached to it a thin spear or shank, to be inserted in a handle about a foot long, having a cross piece on the top, to be held by the hand. After the spear is inserted in the handle, the latter should be shaved flat on two sides, to prevent the end of the handle next the spear from striking against the top of the tobacco stalk as the knife is run down. With this instrument a skilful operator can split the standing plants with great rapidity. They should not be split nearer to the ground than six inches. The cutter may follow immediately after the splitter or at any convenient time afterwards. A common hemp hook is the best instrument for cutting tobacco. The cutting season is a critical time for the tobacco crop. It is subject to a variety of casualties; and without particular care, is liable to sustain great and irreparable injury. It is subject to be *bruised* in handling, to be *sun burned*, and to be greatly injured by *heating* if suffered to lie too long in large heaps. Each of these will most materially injure the crop, and they must all be guarded against with the utmost vigilance. The first is the most difficult to be guarded against, when tobacco is cut in very warm weather. After it is cut, it *must* lie long enough to fall or *wilt*, so as to become sufficiently pliant to handle without *breaking* or *bruising* the leaves. The hotter the weather the more difficult it is to accomplish this object without exposing the plants to the deteriorating effects of being *sun burned*. It is surprising how quickly this takes place, when tobacco is exposed to the meridian rays of the sun, in the month of August, or early in September. The parts of the leaves which are *sun burned* turn white and soon become dry and crisp; and when cured, assume a green color. The parts thus affected are completely ruined, having lost all the qualities of good tobacco. To guard against this casualty, when tobacco is cut early in the season the operation should be performed in the morning or so late in the evening that the sun will not have power enough to injure it. Cutting, both in the morning and evening, may be practised as convenience may dictate, and may be managed as follows. The planter may commence cutting in the morning, taking care to cut only so much as he can secure before the sun has acquired sufficient power to injure it. When the cutting is completed and the plants have fallen sufficiently, he should com-



mence piling it in heaps with the butts towards the sun, taking care to handle the plants gently, holding them by the butts, and avoiding any pressure upon the leaves. By handling them thus, and laying them as lightly as possible in heaps, this process may be performed before the tobacco has completely fallen. The heaping should always commence with the plants first cut so that they may as nearly as practicable, be exposed to the sun's rays an equal portion of time, or in equal degree, and should so progress till the whole is heaped. The stems of the tobacco are the last parts that *will*. Being large and ridged, these require more sun to make them fall, and hence the necessity of placing the butts towards the sun when heaping tobacco. Being thus placed, the stems continue to be affected by the sun, while the plants are lying in heaps. The heaping of tobacco in some degree protects it from being *sun burned*, but the uncovered leaves are, of course, unprotected. Hence the necessity of hauling the tobacco to the place of hanging it as soon as possible after it has fallen sufficiently to admit of this being done without bruising or breaking off the leaves. Sleds are the most convenient vehicles for transporting tobacco to the scaffold or house where it is to be hung, if near at hand. These should have smooth plank on the bottom, to prevent the leaves of the tobacco from being torn or bruised. There should be no standards in the sleds, and the tobacco should be laid on in two courses, the tails lapped and butts out on each side. When unloaded, the butts should all lie towards the sun, unless the hanging is performed in the shade of a house or trees. These precautions are all for the purpose of preventing the tobacco from being *sun burned*. If the cutting take place late in the season, or when the weather is cool, they will not be necessary.

Planters who are largely engaged in the culture of tobacco, will be under the necessity of raising it at a considerable distance from the place of housing it. In that case sleds will not be convenient for transporting it, and it would be a much better plan to have a wagon coupled so as to hold a very long body, and sufficiently high to hang the tobacco, after being put on sticks, across the body. The sticks should be filled with the appropriate number of plants, in the field where it grew, and put at once into the wagon, pressing them as close together as possible without bruising the leaves. This will protect the plants from becoming *sun burned*, and when the wagon arrives at the place of housing it, the tobacco may at once be transferred to the place where it is to be cured. It would be most convenient to have two wagons, so that one may be filled in the field while the other is hauling and discharging its load, and returning. So, also, if there be hands enough, the smaller ones may be heaping the tobacco, while others are engaged in putting it on sticks, and conveying it to the place of housing it. If the tobacco house be so constructed as to admit the wagons to pass through the centre, additional facilities will be furnished for transferring the tobacco to the place where it is to be cured.

Tobacco plants may be split during the heat of the day, without injury. It is only liable to be *sun burned* after it is cut. And hence the splitting process may progress, while part of the hands are engaged in hanging that which was cut in the

morning. When the afternoon has so far progressed that tobacco may safely be cut without the risk of *sun burning*, (which is usually about four or five o'clock in August, and somewhat earlier in September,) the cutting process should commence, and be completed as soon as possible, so as to give time for the plants to fall sufficiently to be handled the same evening, or the next day, before the sun has attained sufficient power to injure them. The first cutting of the afternoon in the early part of the season, can usually be hauled and hung the same evening. That part of it which has not fallen sufficiently to be handled without bruising or breaking, should be suffered to lie in the field, without heaping, till the next day.

It is usual, when there is not time to hang all the tobacco during the same evening it is cut, to let a part of it lie over till morning to be hung while the dew is drying off that in the field. This may be done to advantage if hauled on sleds, provided care be taken to prevent it from heating during the night. If suffered to lie in large heaps, it will be greatly injured in the course of one night. To guard against this casualty, it should be spread in long rows not more than three or four plants deep, when the weather is very warm. In cool weather the danger of heating is not so great. A little experience will teach the tobacco planter to guard against the casualty of which I have been speaking. It is very important that this should be done, as it is completely ruinous to so much of the tobacco as may become heated to a high degree, as it will do if suffered to lie in large heaps over night.

There are two modes of treating tobacco when it is cut, one is to hang it on scaffolds, exposed to the weather; the other is to hang it at once in suitable houses.

The former method must, of necessity, be resorted to where there is a scarcity of house room. By hanging sometime on a scaffold, the tobacco commences curing and can be stowed much closer in houses than it can be, with safety, when first cut. But it is subject to serious disadvantages. Those parts which are exposed to the sun are liable to be *sun burned*, and much of it may, therefore, be injured on the scaffold. Another injury, and a most material one, is, that if suffered to remain on the scaffold till the leaves begin to cure, they are liable to be injured by the dews which fall every night; and still more by a rain, if one should happen to fall. If the tobacco is *housed* from the scaffold before it begins to cure, not much is gained in point of room, when stowed in the tobacco house. If suffered to hang on the scaffold till partly cured, it may be much injured by rains and dews.

The safest way, therefore, is to put it in houses or under sheds, as soon as it is cut. But here again care must be taken to avoid another casualty, that of being *house burned*. It is stated in the Farmer's Guide, page 265, that if it is intended "to cure by fire, the tobacco is carried immediately from the field to the house, hung on sticks, as before described, and these sticks crowded as close together on the tier as they can possibly be, so as to exclude all air from the tobacco. It remains in this situation until the leaves of the plants become yellow, or of the color of hickory leaves just before they fall. This will generally



happen in four or five days, when the sticks must be spread and placed at their proper distances in the house." There never was a greater error than that contained in the above extract. Tobacco thus hooded, would be completely ruined long before the five days should have elapsed. If intended to be cured without fire, the house should be as open as possible for the free admission of air. The sticks on which the tobacco is hung should be placed from eight to twelve inches apart, according to the size of the tobacco, so that the air could circulate freely between the ranges of sticks. It should be continued in this open order until the tobacco is partially cured, when it may be rehung in much closer order, so as to make room for the later cutting. If hung in open sheds, with tight roofs, so much the better, so that the rain is prevented from beating in on the tobacco, which may be done by setting up fence rails or rough plank against the open sides of the shed.

If intended to be cured by fire, the house should be rendered as tight as possible, in all parts, except the roof, through which the smoke must escape. But instead of being crowded together, as recommended in the extract given above, it should have space enough to prevent the plants on the different sticks from *pressing hard* against each other, after the tobacco has completely fallen. Instead of suffering the tobacco to hang four or five days before fire is put under it, the house should be filled *as soon as possible*, and fire put under it *immediately*, to prevent the danger of house burning. For the first few days the fire should be moderate, till the *edges* of the leaves turn of a yellow color. The fires should then be gradually raised and the house kept sufficiently warm to cure the tobacco in a few days. In making kite-foot tobacco, the rule is, I believe, that the tobacco, stalk and all, must be cured in forty-eight hours from the time the fires are *raised*, which, as I have already remarked, must be when the leaves *begin* to turn yellow around their edges. After thus commencing to change color the entire leaf very soon assumes a beautiful yellow hue, and the object is to cure it before it turns to a nutmeg brown. If the curing is not *very speedy*, it will, or a great part of it, change to the latter color before the operation is completed.

The next thing to be done, after the tobacco is housed and cured, is *stripping*. This must be delayed till the *stem* as well as the leaf of the tobacco is thoroughly cured. Stripping can only be performed when tobacco is in such high *case* as to render the stems perfectly pliable, or at least such a portion of them as will supply a sufficient quantity of *tying leaves*, that is, leaves to tie the tobacco in *hands*. To perform this operation neatly, the stem of the leaf with which the hand is tied should be soft and pliant. As seasons for stripping are precarious, whenever tobacco, after being sufficiently cured, comes into *case*, a quantity for future stripping should be taken down, and packed in close bulk, with the tails in the centre and the butts of the stalks out. This bulk should be enclosed by the walls of the house on two or three sides, and plank on the other, and should be well stuffed all around between the enclosure and butts, so as to exclude the air. Thus packed away, tobacco will remain in *case* for a long time, but care must be taken not to pack it down when in

too damp order, otherwise it will go through a heat, and be greatly injured, unless it be stripped out in the course of a few days. If put down in proper order, it may be stripped out at leisure, provided it is not packed in bulk before the weather has become cool, say November or December. When stripped and tied in hands it must be put in bulk, lapping the tails in the middle and leaving the heads all on the outside of the bulk, so that they can become thoroughly dry. If not in too *high order* when put in bulk, as above directed, it may be suffered to remain till February, when it should be hung on sticks, the hands as close as they can be conveniently placed to each other without pressing them together, and hung in the tobacco house, leaving the sticks so far apart as to admit the air to circulate between them. In this situation the tobacco will become thoroughly dry in a few days. It must be left hanging until a rain shall again bring it in *case*, it will be observed that the *leaf*, in contradistinction to the *stem*, will first come in *case*, whilst the stem will be found still dry and brittle. This is precisely the order in which tobacco should be, when it is to be finally bulked down for market or *prising* in hogsheads.

It should now be put down in a very large bulk, which may include the planter's entire crop. The number of courses may be six, eight, or any larger number, and the whole should be enclosed by the walls of the house and plank, and closely surrounded and covered with soft straw, so as perfectly to exclude the air. In this condition it may be kept for any length of time, and will be ready at all times for hauling to market in the *hand* or *prising*. One precaution only will be necessary. When the cover of the bulk is taken off for the purpose of taking out a part of the tobacco for *prising* or sale, the entire course or courses, on the top, should be taken off smoothly, and the cover carefully replaced. This is necessary to prevent the top of the bulk from becoming too dry. When *prising* in the summer, some elder bushes may be spread over the bulk to keep the tobacco damp. Tobacco prepared as herein directed, may be kept any number of years in bulk, or may be transferred to hogsheads and kept for any length of time, not only without injury, but will constantly improve by age.

It should be remarked, that to make tobacco of a very superior quality, great care should be taken when the stripping process is going on, to separate all the injured or defective leaves from the prime tobacco. To this end every plant should pass through the hands of a good judge of tobacco, who should *cull* out all the injured and defective leaves, which should be kept and sold separately. The balance of the leaves may be stripped and tied by small hands, who are not skilled in the quality of tobacco. As many persons should be employed in *culling* as may be necessary to furnish employment to all the less skillful hands. Sometimes, especially in kite foot tobacco, three different qualities should be made.

I have now gone through the entire process of tobacco culture, in which I have endeavored to include every thing which can be of *practical* use to the tobacco planter; and have gone as much into detail as will enable him, with a little practice and the exercise of a sound judgment, to understand and apply the whole process to the best advantage.

It is usual to plant tobacco on our rich Kentucky soil, for several years in succession, on the same ground. Tobacco is an exhausting crop, and ought not, too frequently, to be planted on the same ground. Experience will soon show when the crop should be changed. When it becomes necessary to do so, tobacco should be followed by a wheat crop, and the wheat sowed thickly with clover the following spring. The clover crop should be continued for at least two or three years, and then should have a coat of manure in the fall, and be ploughed in, and suffered to lie till spring, when it would again be in good condition for tobacco.

A. BEATTY.

#### BEST TIME FOR CUTTING TIMBER.

From the New Genesee Farmer.

We suppose another age must pass away before the notion of *lunar influence* on timber will be entirely exploded. When the yielding mind of childhood receives a wrong impression from a parent or perceptor and it is allowed to *harden* for years before philosophy attempts to efface it, argument too often glances off like water from a goose's back.

On what does this notion rest? Why the moon raises tides on the ocean. Admitted; but on what else is its influence felt? If it has not room enough to raise tides on our lakes, can it possibly raise tides of sap in the pores of a tree, where a microscope is necessary to discover them?

But if it did raise the sap, what advantage could we derive from that knowledge? It would raise tides every day; and no one particular time would be better than another.

It has been handed down to us as a rule worthy of remembrance, that "the old of the moon in February is the best time to cut timber." But why is the *old* of the moon better than the *new*? This question might puzzle a Philadelphia lawyer. The "old of the moon" may come on the first day of the month; or it may come on the last—it may differ a whole month. The sap may be frozen, and the moon not able to stir a particle. Or can it act on solids as well as fluids? If it can act on frozen timber, why not on seasoned timber, or solid rock? We cannot understand such occult principles. We admit indeed that the time prescribed may serve well for cutting *some* kinds of timber; but certainly it is not the *best* time to cut *all* kinds of timber.

We believe it may be laid down as a maxim that *timber is most durable if cut when it contains the least sap*; and we have no knowledge that sap ever runs from a tree in full leaf. On a former occasion we stated a fact from an observant neighbor, that basswood rails, which he cut when the sap was in full flow, rotted before they seasoned, though immediately laid up in a fence. On the reverse, we have several instances of timber cut in summer that proved very durable, with not one case to the contrary. We therefore infer that the gradation from the best time to the worst is in the following order: summer—autumn—winter. No timber should be cut in the spring before the tree is in full leaf.

Physiologists, when treating of the functions of

plants, have been too fond of drawing general rules, like other people, from a few observations. Because the sap of *some* trees flows not in winter, they have erroneously concluded it was so with *all*. The sap of the sugar maple, however, flows as soon as the leaves drop in autumn; therefore, to have that timber durable, it should be cut when the tree is in leaf; and as every leaf is employed in pumping out the moisture, it might be well to let the tree lie untrimmed till they are withered.

A timber tree may be very valuable or otherwise, according to the time of cutting it; and in this country where they are growing scarcer every year, it is more especially important to have the best information on the subject.

#### DIFFERENT EFFECTS OF NITRATE OF SODA.

From the Farmers' Magazine.

As there appears to be much diversity of opinion, whether nitrate of soda is beneficial or not in its effects when applied to land, and many varying results after its application, I am induced to send you an account of some trials I have made during the present year; I do this more readily, as it is only by an accumulation of facts that any general conclusions can be arrived at. I distributed the nitrate of soda broadcast on the 27th of April, it was very hot and dry, no rain had fallen for a month previously; the quantity of the saline employed was  $1\frac{1}{2}$  hundred weight to the acre; it was applied to spring tares, oats, barley, beans, peas, clover and wheat. The wheat succeeded partly fallow-land, and partly clover-ley. The nature of the soil on this farm is a stiff heavy deep clay. No perceptible difference took place in any of the crops to which the nitrate was applied until after the rain had fallen, which occurred in a fortnight; after this that portion of the wheat which was manured with the soda (and the year before was preceded by a clover-ley) quickly became more luxuriant in growth and darker in color, the same effects were developed on the young clover that was sated; on none of the other crops could I perceive the slightest benefit from the application of the nitrate. The stretches of clover land wheat to which the soda was applied, were reaped by themselves, an equal number to which it was not applied were also reaped; on thrashing each quantity, it was found the manured portion yielded one-fourth more grain, one-third more straw than the other, but the sample was not so plump, nor its color so good, the straw was not so bright. The same plan was not followed with the other crops to which the salt was distributed, as upon the most diligent investigation at harvest, not the slightest difference between these and the other portions of the fields could be perceived. In the months of June and July, I applied the nitrate to mangel, Swedes and white turnips; no benefit followed.

In offering to you the conclusion I arrive at from these results, I beg to say, I only throw it out as a hint for other investigators, and for my own farther research, for nothing can be more dangerous to the advance of knowledge than drawing sweeping general conclusions from few and isolated facts.

It appears to me, that nitrate of soda on the

heavy lands of this district, is only useful to crops which have succeeded a clover-ley, and to young clovers. Should the future experience of others agree with my own, it at once points out the fields to which in a season it ought to be applied, and may remove some of the conflicting opinions regarding its value as a manure.

OSWALD COPLAND.

Grove hall, Tolleshunt Knights, Essex.

#### NITRATE OF SODA.

From the Farmers' Magazine.

On the 25th of April last, I sowed a ridge in a field of wheat with nitrate of soda,  $1\frac{1}{2}$  cwt. per acre, the ridge adjoining with saltpetre, 1 cwt. 14 lbs. per acre, the ridges on each side of them receiving no manure; the same plan was adopted on the same day in another wheat field. The field No. 1, is a gravelly soil; No. 2, a wet sand, both were fallowed the preceding year. The following is the result:—

##### No. 1.

	Produce per acre.			Increase per acre.			Wt. per B.
	Bush.	Gall.	Qts.	Bush.	Gall.	Qts.	
Without manure	22	2	—	—	—	—	62½
Dressed with soda	26	3	1	4	1	1	62½
Petre dressed with salt	25	5	1	2	3	—	62½
Without manure	23	2	1	—	—	—	62½

##### No. 2.

	Produce per acre.			Increase per acre.			Wt. per B.
	Bush.	Gall.	Qts.	Bush.	Gall.	Qts.	
Without manure	18	—	1	—	—	—	61½
Dressed with soda	28	2	3	10	2	2	62½
Petre dressed with salt	26	3	—	7	4	1	61½
Without manure	18	6	3	—	—	—	60½

I remain, very faithfully yours, a friend to  
AGRICULTURAL IMPROVEMENT.

#### IMPORTANT DISCOVERY—HOW TO RENDER WOOD IMPERISHABLE AND INCOMBUSTIBLE.

From the New Genesee Farmer.

**Messrs. Editors:**—A discovery of the highest importance appears to have been made in France, by which the long-sought preservation of wood from ordinary decay, combustion, &c., is finally achieved. This has been done by introducing into the wood itself, through the agency of vegetable life, the substances which contribute to these important ends.

It has, indeed, been long known to amateur

botanists, that the flowers of house plants, &c., may be colored by the introduction of coloring matter into the organization of the plants; and that the flavors of fruits may sometimes be injured or destroyed by liquids poured upon the ground, at the root of the tree, at the season of their ripening, which are subsequently imbibed into the vegetable circulation. But these isolated facts have hitherto remained with their possessors, without any useful suggestions having been drawn from them, like a multitude of other scientific truths, which only require to be *applied to the arts*, to produce the most important results of usefulness to mankind.

The announcement of this discovery comes to us under circumstances which leave little doubt of its truth. The discoverer having submitted his results to the Academy of Sciences, of Paris, a commission was named from that highly scientific body, to investigate the subject, and make a report thereon. In the hope of usefulness, I have made a translation of this report, (omitting some portions, as irrelevant to my purpose,) for your paper, which I subjoin; deeming it highly important that experiments should be extensively made, the ensuing summer, in conformity with the discoverer's process, as shown in the report. It would be no trifling result to secure timber, in all situations, from decay, and our buildings from conflagration, at a cost so trifling as to be within the reach of all.

A physician of Bordeaux, Mons. Boucherie, has arrived at the all-important result of rendering the tissue of wood almost entirely unattackable by those causes of destruction to which it is ordinarily subject; and at the same time his processes render it much more suitable to the various purposes to which it is applicable in the arts.

A commission of the Academy of Sciences, at Paris, having been named, to examine the subject, Mons. Dumas, in the name of the commission, made in December last the following report, as the result of its investigations:

"The Academy has charged Messrs. Arago, de Mirbel, Poncelet, Gambey, Audoin, Bouscain-gault, and myself, with the examination of the Memoir of Mons. Boucherie, relative to the preservation of wood, the following is the result of our labors:

"The Academy has already examined, with the most lively interest, the preparations of the author; and it has before it, at this moment, pieces of these so remarkable that the task of its commission is thereby greatly abridged. Mons. Boucherie proposes to render wood much more durable, to preserve its elasticity, to prevent the variations in volume which it experiences through the agencies of dry and humid atmospheres, to diminish its combustibleness, to augment its tenacity and its hardness; and, finally, to communicate to it various and durable colors and odors.

"To assume that all these exigencies have been satisfied, and that this has been accomplished by methods, cheap, simple and new; and consummated through the agency of substances that are common, and which bear but a low price, is to fix the attention of the Academy, in a few words, upon the important features of the subject we are charged to examine.

"For the purpose of penetrating an entire tree

with preservative, coloring, or other matter, the author has recourse to no mechanical, costly or complicated means; he finds all the force of which he has need, in that process, within the tree itself,—the same force by which its own sap is elevated and distributed through its various parts. This, alone, suffices to convey from the base of the trunk to the very leaves all the liquids which he wishes to introduce, provided that these are maintained within certain limits of chemical concentration. If a tree be felled, while in full sap and leaf, and the base of the trunk be at once plunged in a vat or reservoir containing the liquid which it is desired the timber shall imbibe, that liquid, in the space of a few days, will ascend to the very leaves, and penetrate every part of the vegetable tissue, except the heart of the tree, which, in some instances of great age and hardness, or imperfect vitality, resists the absorption, and is not penetrated).

"It is not entirely necessary that the tree shall retain all its branches and leaves during this process, although it is important that those of the extreme top should remain uninjured.

"It is not important that the tree shall remain standing during the operation, which would not always be convenient: it may be felled, and its butt submerged in the liquid it is destined to absorb, when this will find its way to every part.

"On the other hand, the tree may be treated standing, if this be preferred; for it is only necessary that cavities be cut near the bottom, or the trunk be partially severed by a saw, and that the parts thus prepared be put in contact with the liquid, to ensure the desired result.

"This species of penetration, or absorption, which is effected in a few days, without either difficulty or labor, is, as will be readily seen, wholly different from any means hitherto employed. Previous methods are well known to consist of forcing the ingredients into the pores of the wood, by powerful pressure, or of introducing them by the prolonged and imperfect action of liquids prepared at much cost, in huge vats, in which the timber is kept submerged.

"The new and ingenious process of Mons. Boucherie has placed at the command of industry an immense *natural* force, which enables it, without cost, to conduct into the most delicate vegetable tissues all soluble substances which it may be desirable to deposit there.

"If the author has resolved, in a simple and ready manner, the great problem which he at first proposed, he has not manifested less sagacity in his choice of the substances which he has adopted for fulfilling all the indications announced above.

"To augment the duration and hardness of wood, and to oppose its decay, either dry or humid, the crude pyrolignite of iron is to be introduced into its tissue. This substance is wisely chosen, because crude pyroligneous acid is produced in all the forests, in the process of manufacturing charcoal; and it is easy to convert this into the pyrolignite of iron, by simply putting it, even when cold, in contact with scraps of old iron: and because, also, that the liquid, thus prepared, contains much creosote, which, independently of the salt of iron, itself possesses the property of hardening, and of guarding against the attacks of decomposition, as well as the destruction

caused by insects, wood and timber employed in constructions and for other purposes.

"Authentic experiments tried in the cellars of Bordeaux, upon hoops, prepared by the author, have proved in the most conclusive manner, the prolonged duration of wood, after subjection to his process. The ordinary hoops fell to powder, upon the least application of force to them, while those of the same age, which had been subjected to his preparation, were as solid as upon the first day they were placed there.

"If he wishes to preserve the elasticity of wood, and to render it less combustible, the author has found in the employment of chlorine with an earthy base, the means of accomplishing these ends. Ever preoccupied with the thought that his discoveries, to be most serviceable, must receive universal practical application, the author has not contented himself with the employment of the chlorate of calcium, notwithstanding its great cheapness, but he has analyzed the sea water from the pits of the salt works, which is without value, and by so doing has obtained therefrom all the qualities necessary to his purpose. The different woods prepared by his saline solutions preserve their flexibility, even after several years' exposure to the air; and thin sheets of this wood were twisted into spirals, first in one direction and then in the contrary one, without their suffering the slightest fracture or injury of any kind. Exposed to the air these thin pieces were neither split or otherwise injured, however dry they became: and, finally, they were so far incombustible as to be incapable of sustaining or propagating conflagration.

"To these highly useful properties, which the constructors of ships, bridges, dwellings, &c., will readily appreciate, and turn to profit, the author has joined others, less important certainly, but still new, and not without interest, in the arts. He colors woods in clouds so varied and casual as to promise much utility, by the employment of his method in ornamenting the most ordinary woods, so as to fit them for the fabrication of furniture, and for other purposes of ornamental use.

"The specimens of this kind, now before the Academy, relieve us from all details upon this head: and it therefore suffices for us to say:

"That the pyrolignite of iron, alone, gives a very beautiful brown tint;

"That by causing tannin to be absorbed by the tree, after the pyrolignite of iron, the mass of the tree is rendered black, while some portions exhibit tints of blue, black and gray;

"That by introducing, first, the pyrolignite of iron, and afterwards the prussiate of potassa, a fine Prussian blue is produced;

"That by introducing, successively, the acetate of lead and the chromate of potassa, a lemon, or chromate of lead color is produced;

"That by introducing into the same trunk, the pyrolignite of iron, prussiate, and acetate of lead, and chromate of potassa, the whole wood assumes a series of clouds of blue, green, yellow and brown, which collectively produce the most varied and pleasing effect.

"The colors and shades may be varied almost to infinity, according to taste or fancy: as chemistry is sufficiently rich, in agents of this nature, to satisfy the wants, and even the caprices, of the most fastidious.

"We have said nothing here, of the communication of odors to woods, by impregnations of this kind, because this is an application easily comprehended without explanation; and also because it is too strictly limited to the demands of luxury to be placed in the same scale of importance with the valuable results which we have above enumerated.

"It is evident, from the bare announcement of all these results, that they have not been, and never could be, the result of accidental discovery. The author has deduced them from simple ideas; and they are the fruit of long continued and laborious studies and experiments.

The commission closed their labors with a recommendation that a copy of their report be transmitted to the ministers of agriculture and commerce, of the public works and the marine, of finances and of war, which recommendation was adopted by the Academy.

At a subsequent sitting of the Academy, that body received notice from the ministers of war and of finance, that they had recommended the method of Dr. Boucherie to the special attention of the commissioners of engineers, the artillery, and the woods and forests. This shows the importance that is attached to the discovery, by public functionaries, and by the first scientific men of this, or any age, residing upon the spot where its results have been witnessed and investigated.

R. W. HASKINS.

*Buffalo, March 22, 1841.*

ANSWERS TO THE GENERAL QUERIES ON THE EFFECTS OF MARL (INSERTED AT PAGE 24 VOL IX, AND ELSEWHERE,) IN REGARD TO SOME FARMS IN JAMES CITY AND SURRY COUNTIES.

[We feel the more indebted to the gentlemen who have contributed to furnish this article, because of the fewness of their number; and therefore, especially, we owe thanks to the only farmer who has answered from James City, the county where marling, as a regular business, was commenced earlier than in any other part of Virginia, and in which the improvements thereby made have been among the most extensive and valuable, and notable, for great benefit to public interests, as well as to private and individual interests. We have several times presented general statements of our own, founded upon our own general and superficial observation, of the valuable and remarkable results of marling in James City county, and the adjoining part of York, which lies next to Williamsburg;\* and, besides the general invitation—and request, addressed to all, we have made particular and urgent efforts to obtain a full report from this, the most interesting marling region of Virginia. But hav-

\* See at p. 108, vol. 1, and p. 415, vol. 8, Farmers' Register, the more extended remarks on this subject and locality.—Ed. F. R.

ing failed entirely in obtaining any response or aid, except in the single case which will be here presented, we can add nothing more to the general description and statements of our own which were offered on former occasions.

The county of Surry stretches along side of James City, for some 20 miles, separated only by the width of James river. But, considering the close neighborhood of Surry, and its numerous and easily accessible marl beds, and the peculiar fitness of the lands to derive benefit from marling, it was remarkable that the practice was commenced late and carried on slowly, compared to James City, Prince George, and to other counties of Virginia, though the progress has been slow every where. Yet there is no part of the country where the effects of marl have been more beneficial, or where they are more wanting, or more cheaply obtained, than in Surry. But few and slow as have been the operations, compared to the facilities and inducements to marl, there are yet in that county much older and much more extensive labors than those of the farmers to whom we are obliged for the following answers.

The land of Surry is generally level, very sandy, and light, and naturally poor. Such, we infer, was the character of all the three farms in regard to which answers will be given. The same general description would suit for most of the marl lands of James City county, (omitting the river farms,) excepting that they are more undulating, and not quite so sandy and light as the Surry lands.—Ed. F. R.

*Answers of H. B. M. Richardson, in regard to his farm in James City county, Virginia.*

1. 2.—From the best information I can obtain, the use of marl was commenced about the year 1776. Quantity then marled about one acre and a half or perhaps two acres. About 1798 another acre or perhaps less was marled. In 1829, I began to marl, since which time (1829) the farm has been under my personal management and direction.
- 3.—The quantity of cleared land in 1829, was about 85 acres of arable land.
- 4.—15 or 20 acres have been since added by clearings, which, at the time the cultivation of said land was discontinued, must have been poorer than the adjoining which was reserved for tillage.
- 5.—The rate of extending the marling, was from 6 acres, to 15 acres per annum. About 100 acres are now marled.
- 6.—None of the marl has been analyzed, but I think the greater part of what I have used was of the best quality.
- 7.—Part of the marl used, was what is called sandy marl, and contained a considerable quantity of "green-sand," but whether the quantity

was sufficient to add to the value of the marl I know not. The other marl was clayey, having very little "green-sand." I presume no gypsum was in either.

8. The stony hardness of many shells that could not be got rid of in the sandy marl, without much trouble, must have caused the marl to be of less value, because, to get the required quantity, the mass of marl used was greater than would otherwise have been necessary. Not so with the clayey marl; for although there were many masses of what we call marl-rock, many of them weighing hundreds, perhaps thousands of pounds, yet, because they could be easily separated, the marl used was not of less value.

9. The quantity of sandy marl applied, was from 150 to 300 bushels per acre. Of clayey marl, from 150 to 350 or more per acre.

10, 11. The above, are the only trials I have made, in varying the amount of marl applied.

12. The cropping and general management of the land for many years before marling, as well as during 5 or 6 years after I commenced marling, was as bad as could be. Corn, wheat, and a small quantity of oats, were the crops, grazing wherever there was any thing to graze on.

13. About 7 years ago, I effected a revolution in the management of my farm, and in the manner of cropping; and up to this time have tried more plans and systems of farming, perhaps, than any good farmer would have done. The increase, however, in the amount of crops and in the fertility of the soil, has been steadily and I think rapidly advancing. I have now for the second time adopted the three-shift rotation as preferable, corn, wheat or oats, and clover—no grazing as usual for the last 7 years.

14. All the newly cleared land added to the farm had been marled invariably before cultivation: consequently no comparison of crops could be had on marled and unmarled new grounds. With one exception, all my old land when marled was in nearly the same condition, that is, nearly bare of vegetation from excessive grazing. The increase in the crops on said land next after marling I suppose to be from 50 to 100 per cent. Generally, the annual increase afterwards was not so great. The exception above referred to is a piece of land marled and cultivated in corn last year, (1840,) which had been at rest and ungrazed for 3 years, and had a good covering of broom straw and other grass. Marl used of best quality. Broom straw, &c. all burnt off clean—on this piece of land, I think the increase in the crop must have been 100 per cent.

15. The crops on the marled land continue to increase annually.

16. I am decidedly of opinion, from observation and experience, that any course of cultivation or rotation of crops, destructive or injurious to the fertility of marled land, would be much more so to unmarled land.

17. About 4 acres of light sandy land marled in 1830, at about 300 bushels of strong yellow marl per acre, was injured, but is now recovering from said injury by the application of manure and no grazing.

18. So durable do I think vegetable and putrescent manures after marling, that, under the

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three-shift rotation of corn, wheat or oats, clover and no grazing, it is only necessary to give to the land an ordinary quantity of good manure, to make it produce clover, and continue to improve without any additional quantity of manure. Thus experience teaches me.

19. The average quantity of corn on all my arable land before marling could not have exceeded 10 bushels per acre, perhaps less.

20. Now not less than 25 bushels per acre.

21. The average quantity of wheat raised on the farm before marling was not over 60 bushels annually. Now not under 100.

22. In 1827 I began farming operations where I now live. In 1829 I began to marl. In 1833, 80 bushels of wheat, and 75 or 80 barrels of corn were made. In 1834, 94 bushels of wheat and 80 barrels of corn. So is it noted in my journal. Most of the land on which the above crops were raised, had been marled a short time previous, and contained the best of all the arable land. The crops of corn above referred to were badly managed, though worked with a hoe three times. In 1840 one-third of the arable land, 30 acres of which is the second best field, with no hoe work, though well managed in other respects, produced 140 barrels of corn. Another third, and which is the best field, although in corn the two preceding years, produced, I suppose, not much less than 400 bushels oats. The other third, and much the poorest field, produced, as well as my memory serves me, between 110 and 120 bushels of wheat, most of which weighed 60 lbs. to the bushel.

23. Not at all—neither the land marled by myself, nor that marled by others long anterior, [in 1776 and 1798,] contradicts the statements of the "recapitulation" embraced in pages 53 to 56 of 'Essay on Calcareous Manures.'

II. *Answers of Bolling Jones, in regard to the use of marl on his farm, (Walnut Valley,) in Surry Co., Virginia.*

*Answers to 1st query.*—The farm became my property in 1834, and I commenced marling that year; but a part of the farm, I do not know how many acres, had been marled by my father, the precedent owner.

2d.—Since 1834 it has been my property, and generally under my management.

5th.—In the earlier part of my marling operations my progress was very slow, as the work was done solely with the farm hands, at leisure times—if there are any such times on a farm. There have been marled, up to this time 241 acres, and this year I have allotted a separate force for the especial business; and hope, by this means, to finish marling all of the arable land in 1842.

6th.—The quantity of carbonate of lime in the marl used is estimated at 55 and 60 per centum.

7th.—There is green-sand in the marl, but in what proportion, I do not know, though I think it is about 12 or 15 per cent. The marl which abounds in it most has ever been preferred, and most sought for.

8th.—In many of the beds of marl on the farm there are hard masses of cemented shells and rocky matter, but they were invariably avoided and never have been used.

9th.—250 and 300 bushels, are the quantities usually applied to the acre.

10th.—There never has been less than 200 bushels put on the acre, and I am satisfied that it was not enough, as the land marled with that quantity was not very poor: but I have seen land that at even 100 bushels to the acre I should consider heavily dressed.

11th.—In 1835 the land marled was dressed at the rate of 500 bushels per acre, and the preceding year cultivated in corn, which was very fine, yielding nearly double as much as it did the previous year—no kind of either vegetable or putrescent manure being used at all. It was put in corn again in 1839, and the crop was evidently injured by over marling, particularly in the weaker parts of the field, though the grain equalled the crop of '36, but the fodder, however, was very much injured.

12th.—The general management of the farm, for some years previous to its being marled, was not such as could be considered meliorating, or even as preserving its fertility.

13th.—The three-shift rotation has been followed since marling, with clover on all the land that would grow it profitably. No grazing allowed, save from Christmas until March—that is, from the time the corn crop is gathered until the time to plant again: but even this partial grazing will be abandoned after this winter.

14th.—The usual and general results of the applications of marl, have been highly satisfactory, the least being 25 per cent., and on some fields 100, the first year of its application. Since its first application, the progression of improvement has been steady, on some fields more and on others less dependent, it seems, on the quantity applied. When a very heavy dressing was applied to a field, the effect was immediate and very great, and the subsequent less and very gradual, and *vice versa*.

15th.—The earliest fertilizing effects of marl have continued to increase from the time of its first application until the present time, and in no instance whatever, have I ever known it to diminish, that is, I have never known any present crop to be less, than the preceding one.

16th.—I am decisively of the opinion, that the early increased product of the marled land, will not be subsequently diminished, under any rotation of crops or course of cultivation, that would not have been decidedly exhausting and injurious to the lands if it had not been marled.

17th.—Inconsiderable portions of the marled lands have suffered from over marling, such for instance, as the galls and the weaker parts of the field, while the field, generally, was greatly improved and not at all injured; but even these places have never been reduced to sterility. The system of cultivation (as said in the answer to the 13th query) was the three-shift rotation, and the soil a light one.

18th.—From my experience, I should say that either vegetable or animal manures are worth double as much applied to marled lands, as to unmarled lands; for on all trials with manures on unmarled lands, they have always proven to be exceedingly evanescent, so much so, indeed, (especially on light soils,) that I have often doubted whether they were worth the trou-

ble and expense of making, and then the additional trouble of carting and spreading on the land.

19th.—This query I can scarcely answer satisfactorily, to myself, but I do not think the farm would have exceeded 9 or 10 bushels of corn to the acre—probably a bushel or so under that estimation.

20th.—The crop of corn this year, (and the last also,) on the marled land, averaged between 19 and 20 bushels of sound corn per acre, by actual measurement.

23d.—Neither my experience nor observation contradicts any of the statements of actual results in practice, as presented in the "recapitulation" embraced in the 'Essay on Calcareous Manures.'

### III. Answers by Peter T. Spratley of the county of Surry.

Answer to query 1st.—Commenced in August, 1834, when I only marled about one acre, the poorest spot in the field.

2d.—The farm was then, and had been for many years before, and ever since, my own property, and under my direction.

3d.—The quantity of cleared land, subjected to cultivation in its turn, was three hundred acres, or thereabouts.

4th.—None of consequence added since.

5th.—About 200 acres have been now marled.

6th.—The strength of the marl from 45 to 50 per cent. as a general average—some of it much richer.

7th.—Besides the calcareous earth in the marl there is green-sand, and a portion of blue soapy-looking clay, of a strong and somewhat unpleasant odor.

8th.—There were occasionally some hard lumps, so strongly cemented that a whole winter's frost would not decompose them.

9th.—From 250 to 500 bushels of marl put to the acre.

10th and 11th.—No quantity applied lighter or heavier than within the limits just stated.

12th.—The previous cultivation had been on the three-shift rotation—1st, corn; 2d, oats upon all worth seeding; 3d, rest. The land was gradually improving under this system.

13th.—The same rotation was continued, with clover, and but little grazing allowed, and with manifest improvement.

14th.—When the marl was spread any length of time previous to the ploughing and tillage, the increase of the corn crop has been fully 50 per cent., and that of the oats [following] upwards of one hundred.

15th.—My experience does not enable me to answer this question, not having made a second crop of corn on the marled land, except as to the acre marled in 1834; the second crop of corn on this spot after marling, was increased fully 300 per cent., with no other aid to the marl than a slight covering of leaves and litter from the woods. The crop of oats succeeding the corn was a good one; and, previous to marling, oats would not have grown on it more than three or four inches high, perfecting no grain.

- 17th.—No damage has been suffered.  
 18th.—None other than vegetable or putrescent manures have been used; no doubt exists with me that they are far more durable on marled land.  
 19th.—The former average product in corn supposed to have been from six to eight bushels.  
 20th.—I suppose on the marled land about 20 bushels, without additional improvement by other manure.  
 21st.—I have never made wheat as a crop—corn, oats, peas and cotton have been my usual crops—and for the last several years I have made no cotton. The picking out I found to interfere with my marling operations.  
 22d.—The same answer as given to the 15th query will apply to this, but I have no hesitation in saying that the annual gross product will not fall short of 50 per cent. over and above its product previous to marling.  
 23d.—So far as my experience goes, it tends to confirm the theoretical opinions of the 'Essay on Calcareous Manures.'

#### IV. Answers of W. C. Jones, of Surry county.

*Answer to 1st query.*—The use of marl as a manure was commenced on my farm by myself in 1836, but an experiment had been made by my father on about three acres, many years ago, perhaps twenty years or more. It is obvious that this piece of land was dressed very heavily with marl, probably with 1200 or 1500 bushels to the acre, as only a part of it, so late as 1834, would produce any thing at all, the remainder being rendered sterile by the immense dose. Now, however, these three acres, without ever having received the least aid from either animal, vegetable or mineral manure (but after having been ploughed *very deep*) will produce at least a third more than the surrounding land, which was marled in 1839 at the rate of 250 bushels per acre.

2d.—Since 1834 the farm has been solely under my management.

5th.—The rate of progress in extending the marling has been irregular, as no separate force was allotted for the business, it being only done at leisure times, after finishing the crop. Up to this time there have been 210 acres marled.

6th.—The marl used would average perhaps 65 per centum of carbonate of lime.

7th.—None of the marl used previous to 1840 contained any green-sand; but since that time the blue marl has been used exclusively, which has enough green-sand in it to give it the appearance of being tinged with blue after being carted in the field previous to spreading it. I am unable to say, however, what per cent. of green-sand is in it, or what effect it will have, as no land has been cultivated as yet on which that marl was put.

8th.—There was nothing in the marl to lessen its value as a manure, neither stony hardness of shells or masses of marl.

9th.—From 150 to 250 bushels per acre—according to the quality of the marl used, and the strength of the land marled.

10th and 11th.—No heavier or lighter dressings, except what was mentioned in the first answer.

12th.—The cropping and general management of the land for a few years, or, in fact, many years previous to its being marled, was not such as could be considered meliorating or improving, but, on the contrary, extremely impoverishing and wasting of its fertility.

13th.—The three-shift system has been practised since marling, and no grazing allowed, except the gleanings of the field by my hogs after harvest.

14th.—The usual and general results of the applications of marl have been encouraging and highly satisfactory—an increase of the crop next following from 50 to 60 per cent. on the light soils, and on the whortleberry and "pocoson" lands perhaps more than 100; and to the present time the increase has been gradual, but far more rapid on the "pocoson" land, which was marled and manured at the same time, and now will produce four or five times as much as it did before it was marled.

15th.—The earliest effects of marl have been subsequently increasing, and have not been diminished by the lapse of time.

16th.—I do not think that the early increased product of my marled land will be hereafter lessened under any rotation of crops or course of cultivation, that would not be decidedly exhausting and injurious to the land, if marl had not been applied.

17th.—I am decidedly of the opinion that either the vegetable cover of the land or other putrescent manures are a great deal more efficacious and durable on marled land than unmarled land.

23d.—No practical contradiction known to your views of the action of calcareous manures.

#### THE HONEST AND BENEFICIAL CREDIT SYSTEM CONTRASTED WITH THAT WHICH CHEATS AND ROBS THE COUNTRY.

[The following is one of a series of dialogues, in plain and common-sense phrase, on the effects of our paper-money system, and the present deplorable condition of the country thereby produced, which have been published in the Philadelphia Public Ledger—which excellent and independent little "penny paper" is one of the best informed, as well as boldest and most honest of the few publications in this country which dare to utter any thing to expose the frauds and iniquities of banks, and the baneful operation of the banking system of this country. We recommend this paper to all southern readers who are destitute of any such source of correct information nearer home. If such a paper, so well informed, honest and fearless as the Ledger, were published in every state of the union, there would be some chance for truth to be diffused in regard to banking, and some hope for relief from the most powerful system of fraud and pillage that ever was borne by a free people.—Ed. F. R.]

*Smith.*—Did you see an account in the papers, the other day, of a newly invented instrument of destruction, called the "Death Dealer?"



*Jones.*—Yes, and I was amazed at the frightful power it is represented to possess. The account I saw stated that a ball weighing not more than eighteen pounds was sufficient to blow the strongest fort into atoms.

*S.*—When I read the statement, I was struck with the similarity between this tremendous physical agent and the equally tremendous moral agent with which we are all familiar, the present banking system. The one annihilates men's lives with the greatest certainty; the other annihilates men's property with equal certainty. It is true that one is quick and the other is slow. It is also true that the destruction wrought by the one is accompanied by noise and by ocular evidence, whilst the other works quietly and unseen. But they are equally destructive. They are both "death dealers," in the true sense of the term; for it matters little whether a man loses his life, or the means of sustaining life, as tens of thousands of persons in the United States have done within the last five years.

*J.*—Very true. Your figure is rather strong, to be sure; but is there no mode of ridding the country of an engine of such a destructive character?

*S.*—It can never be accomplished but by one process.

*J.*—And what is that?

*S.*—By the community's coming to its senses, and abandoning the idea that the public prosperity requires monopolies and special privileges to be conferred upon any one portion. There lies the whole seed of the evil.

*J.*—Explain your meaning more fully.

*S.*—I will endeavor to do so. You are aware that in every trading community what is called credit is a necessary auxiliary to the creation of wealth. Credit, as every body knows, is the power of obtaining temporary possession of another man's property under a stipulation that property of greater value shall be returned for it at some future day. This temporary possession of another man's property, whether it be by buying things on credit, or hiring houses or farms, or by borrowing money, is what enables people who have no property of their own, or not enough to answer all their purposes, to turn their labor to account. It is by means of credit, that the merchant who possesses a capital of ten thousand dollars can import or export goods to the amount of twenty or thirty thousand dollars. It is by means of credit that the manufacturer can supply himself with raw materials upon which he can exercise his labor and skill, and thus derive a profit from what might otherwise be wholly unproductive. It is by means of credit, that a vast number of houses and ships are built, many mechanical trades carried on; and it is by means of credit that industrious and frugal men often become the owners of plantations.

*J.*—You are then, I perceive, a believer in the benefits of "the credit system."

*S.*—Undoubtedly, I am, and so is every person who has taken the trouble to examine the subject. But mark me. By the credit system, I mean the legitimate operations of business prudently conducted, and arising in the natural course of trade, and not the wild, indiscriminate abuse of credit which springs up under an ill-conducted banking system, and which by some is confounded with the other.

*J.*—But are there not risks connected with the best possible credit system that can exist, which sometimes occasion losses to creditors?

*S.*—Most certainly there are, but as no human prudence or foresight can guard against calamities of every sort, so is it impossible that credit can exist without losses. Still, as the advantages of credit, properly conducted, to the community far outweigh all the disadvantages, it has been introduced into every country where there has been the smallest accumulation of capital.

*J.*—Do you consider that a well conducted system of credit can be benefited by legislation?

*S.*—All that legislation ought to do, or can do advantageously, is to afford creditors the facility of compelling their debtors to comply with their contracts, and to punish them if they are guilty of fraud. Legislation destroys the whole basis of credit, when it confers upon any set of men the special privilege of exemption from personal liability to the whole extent of their property for any of their engagements. There is the whole pith of the matter. If limited liability were to be tolerated by the laws in the transactions of individuals, or of all the parties to a limited co-partnership, we should have a race of swindlers springing up in all parts of the land, who would act upon the true gambling principle, of risking a part of what they possessed for the sake of the chance of making great profits upon the exercise of their credit.

*J.*—Then you consider that the proper remedy for a vicious banking system, is individual liability.

*S.*—I can conceive of no other. With full and complete individual liability, the trade in money and paper credits might be left just as free as the trade in shoes, hats, coats, wigs, mutton, beef and bread. We want no laws to regulate carpenters, bricklayers, painters, masons, and the various other mechanics who carry on their business by the laws of competition. If people should pretend to manufacture money for sale, those to whom it was offered would exercise their discretion in judging of its quality as they now do in judging of nutmegs, whether they are made of wood or are the genuine fruit of a tree. None but men of known wealth would be able to keep notes in circulation, and such men would be cautious not to issue too many, inasmuch as the whole extent of their property would be liable for their payment.

*J.*—But have we not had some examples of individuals of doubtful character and credit too, putting notes in circulation to a large amount?

*S.*—Only in times of bank suspensions, when notes were payable, not in money, but in other notes. The Spanish proverb says, "all cats are black in the dark." So it is with banks or bankers, when they do not pay their notes in coin. If there were no notes in existence but those issued by parties individually responsible, there could never be any general suspension of specie payments. Individual bankers, like individual merchants, might fail, but the community would at no time be liable to great expansions or contractions of the currency, and the evils to which it would then be subject, would only be such as are inseparable from the existence of credit, and which no human sagacity or skill can prevent.

## THE AMERICAN COTTON TRADE.

From the Savannah Republican.

From a report made to congress by the secretary of the treasury in 1836, it appears that in the year 1791 the state of Georgia produced about 1,500,000 lbs. of cotton. In 1801 the states of North Carolina, Virginia, and Tennessee had embarked in the same cultivation, the former having produced 4,000,000 lbs., Virginia 5,000,000, and Tennessee 1,000,000. Ten years afterwards tracts of land were colonized upon the banks of the Mississippi. In the year 1821, 20,000,000 lbs. were produced in the state of Alabama, and 10,000,000 lbs. in Mississippi. Florida and Arkansas soon followed in the production of the staple. The following is a table showing the comparative growth in the several cotton-growing states, at intervals of ten years, from 1791 to 1834.

*Relative proportions of cotton grown in the different states.*

Years.	Virginia.	N. Carolina.	S. Carolina.	Georgia.	Florida.	Alabama.	Tennessee.	Mississippi.	Louisiana.
1791	—	—	1½	0½	—	—	—	—	—
1801	5	4	20	20	—	—	—	—	—
1811	8	7	40	40	—	—	3	—	—
1821	12	10	50	50	—	20	20	10	10
1826	25	18	70	70	2	45	45	30	38
1833	13	10	73	73	15	50	65	70	55
1834	10	9½	65	65½	20	45	85	85	62

We annex another table which shows, in general terms, the amount of cotton grown in the world during the same period, exhibiting at the same time the relative proportion produced by the United States.

*Millions of pounds grown in various parts of the world.*

Years.	The World.	United States.	Brazil.	West Indies.	Egypt.	Rest of Africa.	India.	Rest of Asia.	Mexico and S. America.
1791	490	2	23	12	—	46	130	190	68
1801	520	48	36	10	—	45	160	160	56
1811	535	80	55	12	85	44	170	146	57
1821	630	180	32	10	6	40	175	135	44
1831	820	335	38	9	18	36	180	115	35
1834	900	460	30	8	25½	34	185	110	35

The Sea Island now forms but a small portion of the cotton production. In 1834 the export of this species of cotton was \$8,085,000, and during the following year it was \$7,752,936—the whole of it being produced in South Carolina and Georgia. The production will doubtless be somewhat extended hereafter in Florida, but Nature has assigned very strict limits to the growth of the Sea Island plant. The export of it during a period of twenty years has been on an average about 8,000,000 pounds per annum, the principal part of which has been carried to England.

## QUALITY OF MILK.

Several cups have been successively filled while milking from one cow, producing the following results: in every case, the quantity of cream was found to increase in proportion as the process of milking advanced: in different cows, the proportion varied, but in the greater number the excess of cream in the last cup as compared with the first, was as 16 to 1: but, as in some cases the difference was not so much, a fair average might be considered as ten or twelve to one. And the difference in the quality of the two sorts of cream was no less striking, the cream given by the first drawn milk being thin, white, and without consistency, while that furnished by the last was thick, buttery, and of a rich color. The milk remaining in the different cups presented similar differences, that which was drawn first being very poor, blue, and having the appearance of milk and water, while that in the last cup was of a yellowish hue, rich, and to the eye and taste resembled cream rather than milk. It appears, therefore, from these experiments, that if, after drawing seven or eight pints from a cow, half a pint remains in the udder, not only almost as much cream will be lost, as the seven or eight pints will furnish, but of such a quality as gives the richest taste and color to the butter. This fact has been corroborated by chemical experiments, and holds good with respect to the milk of all other animals.—*Blacher's Essay.*

## ANTI-FRICTION.

He who makes hard things go easy, deserves praise.

From the Farmers' Cabinet.

If horses could speak, no doubt they would often complain of the excessive friction of cart and wagon wheels.

It should be the duty, as it is unquestionably the interest of every farmer in the country, to see to the state of his wheels at frequent intervals, and lessen the friction of them to the lowest possible degree. The horse is an interesting and useful animal, and has but a dogged life of it under the most favorable circumstances, and therefore he ought to have his interest and comfort duly considered and attended to. Those who oppress beasts unnecessarily, always add to their own burdens by increasing their expenses; for all domestic animals pay well for kindness and care. A horse will be more useful, and last much longer under kind and Christian treatment, than when he is subjected to unnecessary hardship and extreme drudgery. A horse always draws with the greatest effect when the line of draught is inclined upwards, so as to make an angle of about 15 degrees with the horizon; for at this inclination the line of traction is set at right angles to the shoulder, all parts of which are then equally pressed. When part of the weight presses on the back of the horse, he will draw a load which else he would be incompetent to move; hence, a horse can accomplish more in a cart properly loaded, than he could otherwise. The question, in regard to the material most proper to be applied to wheel-carriages to diminish friction, is one of great importance, and every well-wisher to the

interests of farmers ought to lend some aid in solving it. All the varieties of grease, tar, and their combinations have been resorted to; and there are other substances, which have of latter years been adopted to lessen the friction of machinery; such as black-lead and soap-stone pulverized, and mixed with small quantities of fat of some kind. Yet I have seen no results of comparative experiments published to instruct and guide the public. Should any of the readers of the Cabinet possess practical knowledge on this useful and interesting subject, they would much oblige some of your readers by making it public through your columns. We have many *anti's* in our widely extended country, but we want one more, in the form of an *anti-friction composition*, for application to cart and wagon-wheels, to make them revolve with less labor to our horses; and he who will discover and make it known through the Cabinet, will deserve well of the community at large.

Z.

**CAPACITY OF THE CLAYS AND ROCK-MARL OF VIRGINIA, TO FORM HYDRAULIC CEMENT, AND THE APPLICABILITY OF ROCK-MARL TO BURNING LIME.**

To the Editor of the Farmers' Register.

Presuming that a new and useful application of substances so generally and widely diffused as the clays and marls of Virginia, will be both interesting to yourself and acceptable to your readers, I send you the results of some experiments made upon them in reference to their capacity for forming artificial hydraulic cements. Learning through the work of Vicat\* of the successful application by the French engineers of the clays and chalk of France to the manufacture of hydraulic cement, I was induced to ascertain how far their generalizations were applicable to the clays and rock-marl of Virginia, which I was aware resembled in composition the chalk and clay of France. The clay used in these experiments was of the variety familiarly known as pipe clay or fuller's earth, which, from its absorbent power, is so frequently used in domestic economy for removing grease. The clays best adapted to making hydraulic cement are free from grit or coarse sand, are fine grained and homogeneous, have an unctuous feeling, and are rich in alumina.† The appearance of a clay is a very imperfect criterion of the amount of silica or sand it contains, as clays are frequently rich in silica, whose external appearance would not indicate its presence. The existence of silica, however, in that minutely divided state in which it is perceptible neither to the sight nor touch, is by no means an unfavorable ingredient, as it is in that condition most favorable to its combining with the lime, and forming with it a silicate, which is probably essential to the hardening of the cement. Clays possessing the re-

quisite qualities chiefly abound in the marl region of Virginia, but are by no means rare further west; and, wherever found, will, if mixed in the proper proportion with lime, form a hydraulic cement. The clay of Vaugirard, used in the manufacture of artificial hydraulic cement, at Meudon, near Paris, consists of

Silica	63
Alumina	28
Oxide of iron	7
Loss	2
	100

The resemblance in composition of the clays of Virginia to that so successfully used at Meudon, will be seen from the following analyses.

(A.)—Clay from Smithfield.

Silica	-	-	68.4
Alumina tinged with prot-oxide of iron	-	-	24.7
Water* and loss	-	-	6.9
			100.0

(B.)—Clay from Scott's factory, 4 miles from Smithfield.

Silica	-	-	74.4
Alumina tinged with prot-oxide of iron	-	-	17.8
Water* and loss	-	-	7.8
			100.0

Clay (B) was used in the experiments quoted below. This clay was of a dingy drab color, compact, fine-grained, homogeneous and saponaceous.

The rock-marl was from the estate of Mr. M. T. Dickson, in the vicinity of Smithfield; it consisted of small fragments of shells, cemented together. This marl was found upon analysis to contain 95.9 per cent. of carbonate of lime, the remainder consisting of ochreous sand. The marl and clay previously pulverized were mixed in the proportions stated below; the mixture was then heated sufficiently to render the lime caustic, or to convert it into quick-lime. After burning, the mixture was formed into a mortar by adding water and sand, as in the ordinary process. Mortars formed in this manner, of different proportions of the ingredient, were spread on the bottoms of China jars to the depth of an inch, and the jars filled with water. The different proportions of the ingredients used in the mortars, and their respective behavior when exposed to the action of water, is stated below.

(A.)†—Marl 9 parts, clay 1, combined with one-fourth its bulk of sand, rapidly hardened under water, forming a compact mass, perfectly resisting the action of the water, and may be considered a hydraulic cement of the best quality.

\* It was considered unnecessary to determine the exact amount of water in the clays analyzed, as it had no connexion with the result. The whole amount quoted as "water and loss" in the analysis consists chiefly of water, as the loss is but the fractional part of a grain.

† These experiments were made in the winter of 1839 and '40; and hence the results have been fully tested.

\* Vicat on Cements, translated by Capt. Smith, London, 1837.

† Alumina is mentioned as one of the requisite ingredients of the clay, more from deference for the opinions of others, than from any convictions of my own. I do not regard the presence of alumina necessary, and am inclined to refer the hardening of the cement to the formation of a silicate.

(B.)—Marl 9 parts, clay 1, combined with half its bulk of sand, refused to harden under water, but when exposed to the atmosphere became compact and hard, but was *slightly* acted upon by water after several months' exposure to its action.

(C.)—Marl 7 parts, clay 1, combined with half its bulk of sand, refused to harden under water, but after exposure to the atmosphere became so hard and compact as to perfectly resist the action of water, though covered by it for months.

Mortars B and C would not answer as hydraulic cements in masonry exposed immediately after its completion to the action of water, but would form an admirable stucco, and would subserve all the purposes of a hydraulic cement, where the masonry was permitted to harden in the air before being exposed to the action of water, as in dry docks, the locks and viaducts of canals, &c. These experiments satisfactorily show the capacity of the clays of Virginia to form hydraulic cement, when mixed with lime in certain proportions. It is by no means intended to convey the impression that the relative proportions of the materials selected in the above experiments are those best calculated to form a good cement. Doubtless further examination would have given better proportions, but it was considered unnecessary to multiply experiments upon the subject; for however accurately the proportions might have been determined for the materials used, they would only have been applicable to clays identical in composition with the one used. As the clays are very variable in composition, experiment in each instance can alone determine the proper proportions and afford a guide to the mixture of the materials. Experiments similar to those above described will enable any individual to select the proportions best calculated to secure success. Vicat, whose extensive experience as an engineer entitles his opinion to great credit, recommends the following proportions: 20 parts of dry clay, to 80 parts of unslaked lime, or 110 parts of slaked lime; if the lime be unburned 140 parts should be used with 20 parts of clay. Messrs. Brian and Saint Leger at their manufactory at Meudon, pursue the following process: the clay and chalk (uncalcined) in the proportion of one measure of the former to four of the latter, are formed into a pulp with water, to effect their more perfect intermixture; further to promote which the pulp is thoroughly stirred. The watery portion of the pulp is then separated from the solid, and the latter is moulded into small prisms, which after drying are ready for the market, the necessary burning being done by the purchaser previous to using the cement. In this manner is formed an artificial cement, possessing all the properties of the natural hydraulic cement, as has been satisfactorily proved in the construction of the masonry of the harbor of Toulon, the canals of St. Martin and St. Maur, and other public works, in which the artificial cement has been exclusively used.\* This

\* The process pursued at Meudon could be applied without alteration to the white chalky marl which occurs in the northern part of the state. This marl is perfectly free from shells or fragments of shells, and occurs in a pulverulent powder, or friable nodules. This variety of marl is largely developed in the county

process cannot be strictly applied to the clay and rock-marl, as the latter cannot be sufficiently pulverized to form the necessary admixture with the clay, without being first burned. After having determined by experiment the relative proportions of the ingredients, the clay should be thoroughly mixed by any convenient method with the lime, derived from the calcination of the rock marl, or other source, and the mixture subjected to a heat as intense as that usually employed in burning lime, when the cement will be ready for use. The lime of the rock-marl was not used in these experiments from any supposed superiority over that derived from any other source, but merely to show how successfully it can be substituted for the lime of commerce. A band of this variety of marl extends along the eastern margin of the marl region, from the northern to the southern boundary of the state. Several specimens of this marl, selected from localities widely separated, averaged 81 per cent. of carbonate of lime, while it not unfrequently, as in the vicinity of Smithfield, contains over 90 per cent. of this ingredient. The average richness of the rock-marl in lime is equal to that of the limestones used in this state and Pennsylvania for burning lime; yet to this purpose it has rarely been applied, though admirably adapted for it, by its richness, its open porous texture, which causes it to yield more readily to heat than a compact limestone, and its extensive distribution in a manner presenting great facilities for quarrying. In urging this neglected, though useful substance, upon the attention of the public, regard has only been paid to its applicability to mortars and cements, it is unnecessary to say that it has equally strong claims upon the attention of those agriculturists who acknowledge the beneficial efficacy of lime in their profession. Were it not for the daily proofs to the contrary, it would be incredible that any should still be skeptical as to the efficacy of a substance whose value as an agricultural agent was admitted in the days of Pliny, whose use has been sanctioned by the enlightened agriculturists of Europe for years, and to which large portions of our own country are indebted for their regeneration from a condition of poverty and sterility. Nature adds her confirming testimony to that of man, as the richest soils, *ceteris paribus*, are those derived from the decomposition of calcareous rocks. The superior richness of soils derived from calcareous rocks is strikingly exhibited in the Knobby and other mountains of Virginia, the summits of which consist of limestone, but whose sides are flanked with sandstone. The height to which the sandstone ascends on the side of the mountain, and the boundary between it and the limestone, can be seen at the distance of miles, being strongly marked by the rich luxuriant vegetation of the latter, and the scattering stunted vegetation of the former. Not unfrequently a rivulet rising in the limestone conveys calcareous matter to the soil of the sandstone, thus forming a fertile belt of land in the midst of sterility, and affording a demonstration of the fertilizing power of lime, and a happy illustration of the manner in which nature causes the superabundance of one soil to contribute to the poverty of another. Asmodeus informed Don

of Middlesex, near Urbanna, where it contains from 69 to 78 per cent. of carbonate of lime.

Cleofas, that the physicians of Spain had sworn to practise medicine upon no other system than the one then in vogue. Might not one almost fancy that some of the farmers of the present age had taken a similar oath, from the obstinacy with which they adhere to those customs inherited from their forefathers, which they cherish as sacred heir-looms? Many have no doubt been deterred from the use of lime by the unfortunate experiments of those who, judging from their overdoses, seem to have been guided by a philosophy similar to that of the man mentioned by Dr. Combe, who, concluding that the beneficial effect would be in proportion to the number of pills taken, swallowed the contents of the box at a dose. But thanks to the progressive spirit of the age, and the philanthropic labors of those who have zealously devoted their time and talents to the improvement of agriculture, this lamentable neglect of this invaluable substance is daily diminishing, and the farmer is no longer inclined to think, like the lawyer in the 'Heart of Mid Lothian,' that farming, like driving a gig, comes by nature, but is convinced that it is a refined art, requiring for its successful practice the application of some of the most refined principles of physical science.

C. B. HAYDEN.

*Smithfield, April 20th, 1841.*

#### A LEGACY FOR YOUNG FARMERS.

For the Farmers' Register.

*My sons* :—This is the first day of January, it is snowing at a rapid rate, and as my infirmities forbid my being out, I take up my pen again.

When I was about sixteen years of age I thought myself a wise fellow, but when I arrived at the age of twenty-one, I came to the knowledge that at sixteen I was but a silly boy. At twenty-one, as the law made me a man, I thought I was a man indeed, and determined that the world should soon know the fact; but, ah! how silly the thought; for now I know, that at twenty-one I was but as a child. My sons, are you ready to confess yourselves but as children? Are you not apprised of the fact, that the foolish are full of babbling conceit, without reason; but that the wise are conscious of their defects?

Perhaps you have been at the plough these four or five years, yet I wish you to understand that you are not yet graduated, for as it took you some ten or twelve years to graduate in scholastic knowledge, so will it be at least the same length of time, before you graduate as farmers. I do not intend to assert, that one cannot be a farmer unless he literally holds on to the plough handles; but I do assert, that

'He who by the plough would thrive,  
'Himself must either hold or drive.'

Nor would I assert that one cannot learn without a teacher, for of late we read that a blacksmith has, without a teacher, acquired a knowledge of many languages; yet can it be doubted that he would have obtained his purpose in much less time had he received lessons from an A. M.? And so of you as farmers. Be not ashamed to receive instruction from any source, even from an illiterate menial; for although one may be far

your inferior in a general sense, yet experience may have made him your superior in a few instances. My heart's desire is, that you become men of business, of judgment, and worth, as soon as possible. To this end, I admonish you to ever keep discretion and reason before your eyes. Travel not in the dark; but always put your reasoning faculties in front, that your pathway may be comfortably lighted. I have however to tell you that in your agricultural prigrimage you will discover many outlets from the old beaten road; some of which you may be disposed to travel, as indicating shorter routes to the point of destination. Well, I have no objection to your trying a few of those paths, whilst yet you are in juvenile years; but I would caution you against running off the track too often, unless reason has a strong light ahead; and again, beware of fox-fire.

My sons, do you remember what a high opinion you had of yourselves when saying your lessons from the New York Reader No. 3? but now how grating to your ears, to hear a school-boy, ding-dong, ding-dong, no punctuation, no cadence, no emphasis. And so of the clump-headed farmer; he can be moved by no other tune than the old lullaby, which his daddy used to sing. Now although I revere the ashes of my deceased father as much as any other man could a parent, yet I know that he, and you, and I, are all fallible beings; therefore it is our duty to 'grow in wisdom;' to 'live to learn,' though it may be a fact (which I very much doubt) that we 'die and forget all.'

It is true that we must plough, and sow, and reap, as did our forefathers; but cannot those operations be better timed? Cannot our implements be improved? Can we not make two blades of grass, or two ears of corn, to grow where heretofore there has been only one? Can we not, by improving our flocks and herds, double our quantum of meats and wool; without an increase of expense? I say it can be done, and let me hear you respond, and say ay, and it shall be done—so mote it be.

When I was young, I put my mind particularly to two things, viz.: agriculture, and perpetual motion. The last I thought was within the reach of man; the first, I thought had nearly arrived at the summit of perfection; but now how altered are those opinions, for I find that agriculture is comparatively in a state of barbarism, and the idea of perpetual motion is perfect nonsense. My sons, although your farms may be somewhat improved, yet they may be compared to so many blank books. Now each for himself has to fill out his book, according to his industry and ability; and each for himself has to set the type, and do the printing. And finally, although each book has, or should have, many chapters, yet as they are continually open to the inspection of every passer-by, so will he read and comment thereon. If your work is badly executed, then the intelligent passerby would fain shut his eyes, till out of sight; but read he must, though as grating as the school-boys' ding-dong—and then come comments, as horrible as Milton's *Paradise Lost*. But if your work is good, the reading will not be grating, but grateful; and the comments as cheering as Milton's *Paradise Regained*. If you are a cobbler at your work, you are not only degraded in the sight of man, but your beasts

will upbraid you, by their neighings, and lowings, and bleatings, and squeakings; until you are wont to stop your ears—yea, even thorns and thistles will rise up in your fields and laugh you to scorn; so that you shall desire not only to hide your face from man and beast, but even from nature herself.

I had intended to stop this dissertation at this period, but considering it imprudent to leave you in the briers, I will attempt to show you the way clearly out. If you determine to become neat farmers, and valuable members of the farming fraternity—and why should I doubt it—then give the proof at once, by beginning a thorough course of business, and persevering industry. If briers and thistles, stones and stumps, stand in thick array, ready to assail you at every step, you are to gather up your forces, with their tools, and charge destruction upon them; never laying aside your arms, till every enemy is vanquished, both head and heels, root and branch.

After having cleared the citadel, it is yet necessary that you keep a watch over the premises; for I tell you, that many of the minute men of this pestiferous order, will slyly come back to their old haunts; and if suffered to propagate, you will be compelled to expend more blood and grease, before you can say, my premises are my own.

My sons, take care of your domestic animals this winter; so that when I come the rounds next spring, I have not the mortification of looking on moving skeletons. Give them enough to eat, but beware of waste; and remember that there is nothing equal to the master eye.

Keep your yards plentifully littered, so that your corn field may be thoroughly manured. When the ground is in order, make your ploughs move. Finally, take care of yourselves till you hear from me again; and don't let me hear you say, why I don't know, or I reckoned, or I thought, or 'tis time enough; for you know not what an hour may bring about."

AMHERST MOUNTAINEER.

January, 1841.

#### DISEASES OF CATTLE AND HORSES.

From the American Farmer.

Sir—I send you two invaluable recipes—I say invaluable, because they have never failed in effecting a cure with me, and have saved me considerable property.

*Recipe for the cure of bloated or swollen cattle, when occasioned by too free use of green vegetation, or too full use of water after having eaten grain.*—Give the animal thus affected, from half a pint to a pint of tar, according to its size and constitution; and you will soon have the satisfaction of seeing the animal entirely relieved. The most convenient way that I have found to give the tar is as follows: Elevate the animal's head, (when lying down is most convenient,) open its mouth, and put the tar as low down in its mouth as possible, with a small paddle rounded at the end; then let the animal close its mouth, keeping its head moderately elevated till it swallows the tar.

I believe tar to be excellent for horses with the  
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cholic, though I am not positively certain that it is. I doubt if I did not save two valuable horses of my own with tar, that were extremely ill with the cholic; but am not certain, as other remedies were used previous to the tar.

*Recipe for the cure of sweeny in horses, which is also excellent for wounds, bruises and sprains in horses.*—To 1 pint of unboiled flaxseed oil, add half a pint of spirits turpentine, 12½ cents worth of oil of amber, 12½ cents worth oil of spike, 12½ do. oil of stone, 12½ do. camphor—mix them all together—anoint the diseased part of your horse with the liniment made as above stated, nine days, observing to anoint three days in succession, and then miss three days. Immediately after anointing, heat the liniment in well with a hot iron. The several three days that you omit anointing your horse with the liniment, his diseased part should be well anointed with fresh butter; though this may be dispensed with. Previous to anointing your horse with the liniment the second and third times of three days, the whole mass of accumulated grease should be washed off with warm soap suds, and then dried before applying the liniment. The above mentioned manner of applying the liniment is intended particularly for the sweeny. For bruises, sprains and wounds, it may be applied in the same manner that you would use other liniments in like cases. The above mentioned liniment has effectually cured every case of the sweeny in which I have known it applied. T. T. GORSUCH.

Baltimore Co., March 29, 1841.

#### HORSE DISTEMPER.

From the Kentucky Farmer.

It is an inflammatory disease, and shows itself in young horses by the want of appetite, the dull languid look of the animal, his cough, and then a running at the nose. This disorder always affects the head more or less; it is distinguished into the false or genuine, and the malignant—the first is less a disorder than a purifying of the humors, necessary to all young horses. When the running of the nostrils is not abundant, a tumor is formed under the lower jaw that opens, sooner or later, and discharges a great quantity of matter. That is the genuine or benign distemper—the false or malignant is derived from the first, when it has not been well cured, and reappears, and is a malady of the same kind, with the same symptoms; if it is not cured thoroughly, it turns infallibly into the glanders, very seldom cured, and devotes the animal to a certain death. The malignant distemper is accompanied with a high fever, a swelling of the head, hard breathing, and the running at the nose is so thick that it comes with difficulty; the animal must immediately be bled, in order to abate the inflammation. The nostrils must be injected with mullen or flaxseed tea, or both combined; it prevents the ulceration of the inside of the nose, and facilitates the running of the matter, particularly if a fumigation is added to the above. It is made in the following manner; boil oats in the mullen tea, or flaxseed, or bran or any other substance which, when thick enough, retains long a sufficient degree of heat; put a small quantity of this wash into

a bag 2½ feet long, and large enough to admit part of the horse's head; a thong of leather or rope fastened to the bag goes over the head like a headstall; the wash must not be too hot as the horse could not bear the steam, much less too cold, or it would have no effect. When after a certain time it is partly cooled, take off the bag, and begin often the same operation again during the day, observing to take the bag off to let the horse snort out the matter, if he is so inclined, and put it on again if still warm enough.

If the tumor under the lower jaw opens of itself, it should be rubbed with the following ointment; beat one or two yellows of eggs with spirits of turpentine, and put some of it on a bunch of tow, held fast by a sort of covering or bandage to keep the cold from the sore; it is necessary to observe that any open sore or wound should be covered to exclude the external air and all kinds of insects. This dressing must be done every day exactly. When the horse is cured, he must be purged once or twice in order to carry off the remains of any venomous matter. Care must be taken to water the horse out of a bucket, if during his sickness he could not stoop his head to drink as usual; as he is feverish, the want of water would increase his sickness and his sufferings. During the horse's sickness, he must be dieted in the following manner: cut straw and bran; his drink, mullen or flax-seed tea, with a handful of bran, sometimes a little salt given milk-warm; if the weather be cold, a sick horse ought to be covered, if possible, or at least sheltered from the cold.

Grass founder or melted fat is an inflammation of the inner soft membrane of the bowels, lined with a mucous substance that lubricates them in that disease and looks like melted fat; it is most common in summer after too much fatigue and over feeding, or too strong a physic; it is the dysentery of horses; the animal dungs with effort, and the excretions are mixed or covered with a sort of jelly, and sometimes slightly bloody—the animal is very thirsty, looks towards his sides which beat violently; loses his appetite, grows poor, and may lose his life if not cured in time. As soon as the disorder is known, the best remedy is injections of mullen, bran or flax-seed; very little hay, no grain. Bran and water—injections and drinks of slippery elm, if the first injection could not be procured. Boiled barley mixed with honey in small quantity, makes a cooling diet and is used with success.

I am with esteem, yours, M. MENDELLE.

#### ON SALT AS A PREVENTIVE OF DISEASE IN HORSES, CATTLE AND SHEEP.

From the London Farmers' Magazine.

My stock having escaped the prevailing epidemic that has been general in this neighborhood for the last six months, not a single case having occurred among a considerable quantity of horses, cattle and sheep, although grazing in fields adjoining to where diseased stock was depastured, separated by hedges only, and also adjoining a turnpike-road where stock affected with the complaint were constantly travelling; I shall therefore give to the public my impression of the reasons I con-

ceive that exemption is owing to, hoping that others may benefit from the same practice, should my opinion prove correct.

The practice alluded to is, to place plenty of salt within reach of every species of stock, so that they may at all times have it in their power to gratify their appetite for this condiment, of which they are very fond, and consume some quantity, particularly stock that have been accustomed to it, for on putting them into a fresh pasture or yard where there is no salt, on returning to the field or place where they had been used to find it, (even after some time has elapsed) they will immediately make for the spot in search of it.

I am aware that salt is strongly recommended by many writers on agriculture, but is not so generally used as it deserves; one reason may be, the difficulty of keeping up a supply where it is exposed to the atmosphere, as in damp weather it dissolves quickly, and often requires to be renewed.

The best salt for stock (which I make use of) is called at the works, *pickings*: it is in flat pieces, varying from one inch to two and a half inches in thickness, extremely hard and pure; it is an incrustation from the brine adhering to the bottom of the pan or boiler, in which the brine is evaporated, requiring great labor to separate it from the pan with sharp mattocks; it is usually ground between rollers by steam-power, and is then called agricultural salt, and is used to a considerable extent on the light blowing sands for turnips and clover.

These cakes or pickings will remain undissolved when exposed to the weather for a length of time from its hardness and fineness of the grain, which gives it the appearance of marble when licked by the stock. The best way is to place it in small stone-troughs, in conspicuous parts of the fields, also in the yards, stable-mangers and feeding-stalls. The price I give for it at Droitwich, is five-shillings per ton, which quantity will supply a great stock for many months.

I think it right to add, that the situation of my farm is high and exposed to the winds, the pastures being large and open; this may, in some degree, secure the stock from infection; but, as I have stated before, they were contiguous to a public road, and also to infected stock; I can, therefore, only account for my perfect exemption from the disease in the liberal use of salt.

RICHARD SMITH.

Upper Hill Farm, near Droitwich, Worcestershire.

#### COTTON CULTURE IN INDIA.

From the American Farmer.

It is stated, as a statistical fact to be relied on, that in Great Britain there are three millions of people who owe their means of support to labor bestowed in some form, on cotton produced in the United States. Seeing this, it is argued that any great irregularity or failure in the price or supply, could not fail to produce serious agitation if not convulsion in that island:—and hence is inferred the constant anxiety on the part of that government, to put an end, as far as possible, to all dependence for the raw material on the productive capacities of any people not under its own dominion. Natural as may appear such a desire to

give all possible encouragement, by the government, to every measure calculated to insure a supply for her manufacturers at home from her own possessions abroad, the conclusion of the treaty between Lord Palmerston and Gen. Hamilton, recognizing the independence of Texas, without any reservation against slavery, in a country so extensive, so fertile, and so well adapted to the growth of cotton, would seem to contradict the idea of any such fixed and long-sighted policy; as it seems also to be at war with her own measures for the extinction of slavery in the British West Indies. For ourselves we are nothing loath to believe, that the young republic on our borders owes much in that, as in other important foreign negotiations, to the superior vigilance and sagacity of her young diplomatist, whose career has been marked equally by energy and address, in a degree unexampled under so many discouraging circumstances, and highly auspicious for the fortunes of the country he represents, as well as, we hope, his own. Be that as it may, it behoves us to look the question full in the face. It is not by blinking it that we can understand the real state of the case, or be the better prepared either to avert or to submit to its results. From a source professedly hostile to the existence of slave labor, and, doubtless, anxious to see its prophecies realized in its own day, we extract some statements, with the deductions of the writer, which invite the attention as well of the practical planter as of the political inquirer. *Fas est ab hoste doceri* is a sound maxim in politics and in war.

"Well known cotton statistics go to show, that the total amount of the cotton-export from this country to Britain in 1840, was 1,245,000 bags, of which 434,642 were from the Atlantic states. The cotton imported into Britain the same year, from India, amounted to 216,495—about one-half the export from the Atlantic states. In 1834, it was only 88,122, so that during the last seven years, it has increased 128,373, or at the rate of 145 per cent. In 1834, the export from the United States to England, was 731,335, and its increase during the last seven years has been 513,692, at the rate of 70 per cent. So that Indian cotton in the British market (says the Philanthropist) has gained considerable on that of America." The British possessions in the East Indies embrace a territory nearly as extensive as Europe, with a population of 150,000,000 of ingenious people; price of labor varying from 1d. to 3d. a day, and the cotton they consume is computed to exceed the crop of the United States.

In answer to the supposition, that the quality of the cotton of India forbids the fear that she can supply the wants of the British manufacturer, even if the quantity could be produced; the writer before us relies on the authority of various travellers, to whose testimony it would be worse than foolish for the political economist and statesman, not to say the provident planter, to shut his eyes. Some of these follow:

Major General Briggs, who spent thirty-two years in India, explored almost every part of it, and administered the affairs of government, in several provinces, says—"With respect to the means India possesses for growing cotton, it is necessary to consider the extent of the country, the nature of the soil, its vast population, the description of their clothing, and the purposes to

which cotton is applied, before we can have any conception of the great capabilities it has of supplying, not only England, but the whole world if necessary." And again he says—"We think enough has been said to show, that there is neither want of cotton soil for the indigenous nor the American plant, and we may with confidence assert, as the knowledge of soils and climate becomes more and more studied and attended to, that India will prove capable of producing cotton of any quality, and to any extent."

Dr. Spray, a botanist, one of the Company's servants in Bengal, recently stated before the Royal Asiatic Society—

"It is certainly without a parallel in the annals of the world, that a country possessing such capacities as India, should have been so long hermetically sealed against the enterprise of Britons, in order to prolong the abuses of patronage. Had the peninsula been open, we should not now be dependent upon America for raw cotton, nor would the country have been brought, as it was four years ago, to the very verge of bankruptcy and revolution, when the stock of cotton was not adequate to three weeks' consumption. To this astounding blunder the southern division of the United States owes its cotton plantations, and its rice-fields, and also the blighting curse of slavery. Evidence confirms the fact, that cotton can be grown in India, fully equal, or rather superior, to the bulk of American."

Kirkman Finlay, Esq., in a communication to the chamber of commerce, Manchester, says—

"India is a country of such vast resources, with such abundance of soils adapted to the cultivation of cotton, such a variety of climate, and such an immense laboring population, that it appears of all others best fitted to become a cotton-growing country, and to send an article of the finest quality, and in the greatest abundance."

Mr. John Gladstone, an authority in commercial matters, says—

"For the supply of the raw material we are almost wholly dependent on foreign countries, whilst we have and possess in the British dominions in India, resources sufficient to supply all we require, and to an increased extent if demanded—resources that are within our influence and control, and where the only limit to the consumption of British manufactures is the ability of the natives to pay for them; whilst we possess at the same time the means to stimulate and increase our intercourse with safety and advantage to the empire at large."

Mr. George Ashburner, in a paper read before the Asiatic Society, remarks—

"Labor in central India is cheaper than in almost any other portion of the world; the wages of an able-bodied man being only three rupees [six shillings sterling] per month. It has been estimated, therefore, that Berar cotton may be cultivated profitably for 30 rupees per candy, or or rather less than a penny a pound."

The next question for the American investigator of a question of the deepest interest is, what obstacles have prevented the development of capabilities in India to supply the country, under whose government she groans, with an article from which, were she suddenly cut off, the very existence of that government would be endangered. An answer to this inquiry in the view of



the writer before us will be found in the extracts which follow, and if well founded would appear to account fully, as well for deficiency of supply, as for defectiveness of quality.

In our next we shall present the views of this painstaking writer as to the measures and causes which may be expected to operate in the removal of the obstacles here designated, and to insure to Great Britain an ample supply of this great staple of our slave holding states from a region under her own control, and of a quality to meet all demands.

"The chief obstacle however, to cotton-growing in the East, and indeed the great cause of most of the evils of India, lies in the nature of the government that controls its destinies, a government which acts, not for the benefit of its subjects, but the aggrandizement of itself. Wreasting from the natives the proprietorship of the soil, it imposes on them taxes under which no people could flourish. It subjects them to a system of forced labor and purveyance, which, allowing no security for property, takes away the motive to its accumulation. The insolence, exactions and cruelties of its officers in many cases leaves no refuge to the miserable native but absolute poverty. Nothing scarcely is planned or executed for the good of the country; a few nabobs think themselves entitled to coin money out of a hundred million people, though their policy, so far as the accumulation of wealth is concerned, is scarcely so wise as the slave system of the south. The virtual assumption by the government of the proprietorship of the soil, is the root of the mischief. It has proclaimed itself the universal landlord, and affirmed its right to take from its tenants what it will. Before the country came under British rule, the Hindoo or Mahomedan sovereign claimed as a tax, a limited portion of the crop of every man's field, leaving not less than three-fourths to the farmer. The British government takes the whole matter into its own hands—fixes an assumed capability in every field to produce, an assumed price on the produce itself and then exacts from 35 to 45 per cent. of the money value of that produce as its share for ever;—and all this, without any reference to varying crops or prices! When the produce exceeds the amount previously fixed, the assessment is increased. When an individual fails in the payment of this tax, it is collected off the village. When the crop of a whole village is deficient, neighboring villages are compelled to make up the deficiency. 45 parts in 100 of the gross produce of the soil are taken by the government. As to the cultivator, his average share of the gross produce is stated to be generally from five to six in a hundred! The tax too is demanded in money; a most grinding hardship in a country where the people depend more upon barter, than a circulating medium.

The effects of the land-tax are represented as most destructive. Villages, in times past happy and flourishing, have been desolated by it, and the cultivators in numerous districts driven from their farms, so that large tracts of land once occupied, are now covered with jungle and ranged by wild beasts. It has beggared the industrious ryot, and converted him into a robber or assassin. And there is perhaps not one of the many famines under which India of late years has groaned, that may not be traced to its blighting influences. In

1827-8, a famine prevailed in the north-western provinces of Bengal, which carried off, it is said, 500,000 human beings, more than the whole population of Illinois. And yet the same year, as much grain was exported from the lower parts of Bengal, as would have fed half a million of people, at a pound of rice a day, for a whole year. The *Oriental Herald* for February, 1839, states, that "in 1819, there were 19,676,076 beegas, or about 6,558,692 acres of waste land, in the very provinces where half a million of human beings died last year from actual starvation." While immense tracts of fertile land have been abandoned, and others suffered to remain the haunts of the tiger and jackall, the natives of the country, the real, *bona fide* proprietors of the soil, are not allowed to bring any portion of them under cultivation, except on payment of whatever amount of taxation may be imposed by the government, which is so heavy as in many instances soon to drive off the new settlers.

The pertinacious adherence of the board of directors to this ruinous system, seems to amount to madness. In the year 1835, Sir Robert Grant issued a proclamation, offering to those who would cultivate waste land, freedom from taxation for five years, and from half the usual amount of taxation the next five. After the natives had overcome their distrust of this strange kindness on the part of the government, they began to avail themselves of the offer, and, under a system which secured to labor its just reward, soon showed what they could do. The court of directors, however, in less than three years, as if bent on keeping down all improvement in the country, ordered the offers to be recalled!

The Rev. Howard Malcolm of Boston wrote:

"Feb. 1837. A more beautiful country than that from Cuddalore to Tanjore, (Madras.) cannot possibly be imagined. The dense population and rich soil give their energies to each other, and produce a scene of unsurpassed loveliness. But the taxes and other causes keep down the laborers to a state below that of our southern slaves. The government share of rice crops is, on an average, about 60 per cent. But the mode of collection in money causes the cultivator to pay about three-fourths of the crop."

This grinding land-tax, then, destroying, as it does, the hope and energy of the laborer, and weakening the motives to the exercise of skill and carefulness, is the first and greatest obstacle to the free growth of cotton in India.

Several other obstacles may be noticed.

1. The almost absolute dependence of the cultivators on their bankers. The grower of cotton, in the beginning of the season, without seed, without money, is obliged to apply to the village banker, who lends his money on condition, first, that he receive exorbitant interest, secondly, that the entire crop be sold to him in advance, at a low price. Such a bargain, of course, takes away all motives to carefulness in raising and preparing the cotton, inasmuch as the grower knows that he will get no more for a good than bad article.

2. The revenue officers frequently will not suffer the crop to be touched, till security be given for the payment of the land-tax. Meantime, the crop ripens; the cotton falls to the ground, and, becoming mixed with leaves and dust, is greatly deteriorated.

3. The country is without good roads. There are no facilities for carrying the cotton of Central India to the coast. Raised in Berar, for instance, it has to be carried to Bombay, 600 miles, on the backs of oxen, the journey occupying 75 days, and the cost of conveyance being 80 per cent. on first cost. And it not unfrequently happens, that heavy rains overtake it on the way, so that large quantities are annually destroyed or greatly damaged. The finer kinds, it is said, are far more injured by the rains than the inferior; hence another inducement to send common cotton.

4. The cotton is often seriously injured by being brought into the government yards, where, if the owners cannot immediately pay the taxes, it is buried in the ground, no straw or matting being interposed between it and the earth.

5. It is stated, that in Egypt and Peru, cotton could not be grown at all, without the aid of artificial irrigation. No good cotton is imported into Great Britain from warm climates, which has not been irrigated. In India, as if to compel the growth of common cotton, irrigated lands are doubly taxed, sometimes trebly or quadruply.

Mr. George Thompson thus sums up the difficulties in the production of cotton.

"Now look at the difficulties in the way of growing cotton: First, the absence of proprietary right in the soil. Here is the master-evil; here is the great injustice of our administration in India, depriving the natives of the soil of their right to that soil; utterly despising them; sweeping off all the great landlords and all the little ones together; reckoning directly with the cultivator of the individual field, and taking from him at least 45 per cent. of the gross produce of the soil. Then, the heavy and fluctuating assessments; then the utter dependence upon the village bankers, producing, as you have seen, carelessness in growing, in packing, and in cleaning the cotton. Then the damage done to the cotton on its journey from the interior to the coast.

"Then the insufficient accommodation, or rather no accommodation at all, which it finds when it has arrived at the coast; for you have seen, that in Guzerat, though a part of India as well managed as any other part, it is tumbled 'in to a pit covered with lumps of earth, and there it lies to contract moisture, and it comes up in a state perfectly unfit to be packed and embarked for this country. But again, there is the want of care, on the part of the natives, I admit, in respect to soils and situations; then the non-introduction of foreign seeds, which is a very important part of the business; then the want of the means of transportation; then the negligence and caprice of the revenue officers, who often, through mere disinclination, refuse to assess the cotton, until it is very much injured in its quality; then the want of an efficient system of civil administration, so that the individual who is injured can obtain no redress, and must apply, if he does apply, to a man who has rather an interest in oppressing him, than in redressing his grievances. Then the fact that cotton is propagated for ages upon the same soil and from the same seed. Add to this the insufficient care paid to the rotation of crops. Then add the fact that other crops are grown along with the cotton crops, which interfere with the health and productiveness of the cotton."

None of these hindrances, it will be observed,

is inherent in the nature of the soil, or character of the people. A wise government could remove them all. Still, despite of their unhappy influence, the exportation of Indian cotton to Britain, has increased, as we have seen, during the last seven years, at the rate of 145 per cent., while that of American cotton has advanced at the rate of but 70 per cent.!

#### DESULTORY OBSERVATIONS ON THE BANKING SYSTEM OF THIS COUNTRY, AND THE EFFECTS OF ITS DIFFERENT MODES OF OPERATION. ADDRESSED TO THE CONSIDERATION OF THE AGRICULTURAL INTEREST.

Continued from page 244.

#### *Banks of circulation.*

III.—Having stated and described the important benefits derived from the operations of banks of deposit and of discount, we now come, next in order, to the consideration of the third great operation of banks—that of *issue*, or *circulation*—or of creating and supplying to the country a *paper currency*. This, though always and universally a legalized operation of banks in this country, is an illegitimate part of their business, not necessary to their other proper and always beneficial action, and which, in any degree of extent, if not always injurious to the community, is certain to become so by its excess; and which excess has never yet failed to follow a commencement of the privilege of creating and issuing paper money for private benefit.

"A bank of circulation," says Mr. Raguett, in his excellent 'Treatise on Currency and Banking,' "is an institution established solely for the purpose of lending *credit*; which is performed by exchanging its promissory notes [bank notes] payable to bearer on demand in coin, or giving transferable credits on its books, also payable on demand in coin, for the promissory notes of individuals, payable at a future fixed day, the latter paying a percentage per annum, equal to the interest on a loan of capital, for the advantages they consider themselves as enjoying by dealing in the market with the credit of the bank instead of their own." All the banks of the United States, (except the savings' banks,) are banks of circulation, and combine that operation with those of discount and deposit. And it is the real profit to the banking interest, derived from this power of creating paper money, and the supposed benefit of its creation to the public interest, which give to the existing banks all their hold on public favor. The other, and real and important benefits of banking are scarcely thought of, in comparison to the delusive fascination of prospective wealth supposed to be offered to the community by the creation and increase of paper money by private individuals. It is this privilege of issuing their own notes, not bearing interest, as money, and the certain effect of such issue in substituting and driving abroad the gold and silver coin which formed the previous currency of the country, which give to the banks of this country all their dangerous power and

baneful operation; and yet it is this one office of fabricating currency which constitutes the great merit and public benefit of banks, in the opinion of those persons who most strongly advocate the general procedure of the banking system of this country.

*VI. The three operations of banks as combined, either in legal and honest banking, or illegal and fraudulent banking.*

The definition given above of a bank of circulation applies however only to such as comply, and but so long as they continue to comply, with the proposed object of their institution, and their obligation to *pay their notes on demand in specie*. Even when so complying with all their obligations, the evils and the dangers of banks of circulation are still impending, and their occurrence inseparable from the system, although in its most perfect state. But the impending dangers are fully realized, and the previous evils are increased beyond computation, when these banks have ceased to comply with their obligations, as all in Virginia and nearly all in the United States now have done, either avowedly or virtually. The above definition therefore does not apply to banks such as ours now are, and are like long to be—issuing notes for which the banks *promise to pay on demand*, but which they *do not pay* and cannot expect to pay for years to come, if indeed ever. It should therefore be borne in mind by the reader, that the name and character of a bank of deposit, of discount, or of circulation, or combining all these three operations, is *deserved only by such institutions as truly conform to the design of these several operations*. Such would form another general class, exercising the business of *legal and honest banking*; even though their operations in point of fact may be unsound, illegitimate, more or less injurious to the public interest, and still more dangerous, in tendency to the greater evil of running into *illegal banking*, and *fraudulent banking*, whether it be afterwards legalized or not—and to which latter grand division now belong all the banks of Virginia, and nearly all of the United States. This, which we designate as the *fraudulent banking system*, then requires a very important modification of the foregoing definition of a bank of circulation. The operation of a bank of circulation, upon this the more general system, is to exchange its notes (which carry no interest,) and which it *promises* upon their face to pay on demand, but *does not pay*, (and is protected by law in the refusal to pay, and from all efficient penalty or reparation for the wrong,) for the notes of individuals which bear interest, and of which the payment is strictly enforced, both by law and usage.

If the banks had been at first established upon this non-paying principle, there would have been something like *honesty* in the course pursued. Borrowers and the public generally might then at least have exercised their discretion, and have chosen upon true grounds, whether or not to receive paper, as money, which was avowedly irredeemable, and dishonored and discredited by the issuers from the first outset. But, on the contrary, the banks complied with their obligation to pay specie on demand, until the confidence of the public had been secured, and until

the whole circulation of the country had been filled almost exclusively with this paper currency, and it had had its sure and inevitable effect of substituting and driving off the previous metallic currency of the country. Then, when pressed by the just consequences of their gambling speculations, and other misconduct, or urged by the desire to make larger profits than legal or honest means would permit, the banks *refused* to pay their notes, which were in circulation to the amount of many millions of dollars, and which indeed formed the almost entire currency of the country. There never was a more gross and enormous fraud perpetrated on any people, than was exhibited in each of these bank suspensions; and each and all of which have been afterwards legalized and sustained by the governments of all the states of the union.

*VII. The best and safest course of banks of circulation illustrated.*

But these remarks, on the existing state of fraudulent banking and irredeemable paper currency, are in advance of the regular order of the subject. Let us therefore return to the operation of banks of circulation, while they really and truly continue to pay on demand the sums promised on their notes.

It is easy enough to understand how a bank makes profit by issuing more paper than the amount of its capital stock, and that the greater the excess of the issues, if the notes can be kept from being returned to the bank to be redeemed, the greater will be the profit.

Suppose the actual and proper amount of currency of a country to be 10 millions in gold or silver coin. Banks of circulation are then first established, whose capital amounts to 5 millions, with the usual legal privilege to issue three times the amount of their capital in paper, or 15 millions. Suppose that there is paid into the bank, and afterwards retained there, (both of which suppositions are monstrous, and will be universally false,) the whole 5 millions of capital stock in gold and silver, and that the banks use their privilege of fabricating paper money so moderately that they issue and keep in circulation only twice as much paper as the amount of their capitals, or but 10 millions of paper money.\* Then the ef-

\* The capital of no bank has been paid in specie, in any case, and generally but a small proportion of it was in specie. After paying a small part in specie, the usual course is for the stockholders to give their notes for the balance due. In many cases, (though not in Virginia,) the stockholders have done still better, and paid scarcely any thing; they merely executed their individual notes to the bank for their entire payments, due in specie, and gave their certificates of stock as sole security to the bank. Of course there never could have existed the least degree of responsibility of such a bank, and its circulation was a mere means for levying contributions upon, or of swindling and stealing from the community, from the beginning to the end of the bank's career. The other supposition above, of a bank's retaining all its capital in specie, or even one dollar in specie for two dollars of the paper in circulation, is never approached in practice; and was assumed above merely to illustrate the operations of a bank of circulation when in the *best possible condition of responsibility*. An indication of the actual practice may be seen in a recent "bank relief"

fects would be, first, a permanent abstraction of 5 millions from the original specie circulation of the country, to be kept in the vaults of the banks, and a simultaneous filling the void thus created with 5 millions of paper; and, next, overflowing the channels of circulation with 5 millions of paper more. There would then be 5 millions of specie kept idle in the banks, and of course forming no part of the actual and useful currency, and 5 millions more of specie and 10 millions of paper in circulation, or 15 millions in all, for a community for which 10 millions had before served all the purposes of trade and business. Now the first question is, would this whole amount of money, thus increased 50 per cent. in quantity, *remain in circulation, or not?* Many of the borrowers and would-be-borrowers from banks, and most of our legislators also, believe that the newly added quantity of currency would remain in circulation; and believing also that *paper promises are money*, and that the increase of such paper promises is an increase of national capital, they infer that the country will be so much the richer by this addition of 5 millions. On the other hand, all political economists, even of opposite schools, concur that the surplus 5 millions *could not* remain in circulation; because, there being more money than was needed for the wants of circulation, money, like any other commodity, would fall in market price; and if it fell only one per cent. below the value of money in other countries, that depreciation would be enough to cause it to be exported; that is, used to purchase foreign commodities, or be otherwise vested abroad, until all the surplus 5 millions had been thus disposed of. But as the bank notes would be of no value abroad, they would remain, and the 5 millions of metallic money would be exported—thus leaving the country with precisely its original amount of circulation, 10 millions, but the whole of it in bank paper, (as yet redeemed when required,) instead of 10 millions in specie as formerly. Still, however, there being as yet entire confidence in the banks, their notes would not be returned upon them faster than they could be re-issued, and no evil would be very manifest in this thorough change from a metallic to a paper currency. This state of things would present the best possible condition of the banking system, embracing the operation of issuing and circulating paper money; and for the present we will leave it in that condition, to consider the effects on both banking interests and public interests.

We have supposed that the bank has issued, and keeps afloat, on an average, 10 millions of bank notes; and that the public confidence is so great that the specie in the vaults is not reduced by demands for payment below the average amount of 5 millions. All the paper money in circulation had been issued in discounting business notes, or

in more permanent loans—and therefore the bank is receiving interest on 10 millions, and its specie capital kept on hand is 5 millions, which was the amount advanced by the stock-holders. The banks receive from this new source of circulation, (besides their previous and fair profits derived from discounting or deposits,) the interest of 10 millions, or of an additional 5 millions over and above their capital paid in. Or, if having regard to their actual capital of 5 millions alone, they receive, from their borrowers, interest at 6 per cent. on 10 millions, or what is equal to 12 per cent. on their actual capital stock of 5 millions.

Therefore, even upon this supposed excellent condition of things, more favorable to the strength and responsibility of banks than ever existed in a single real case, the gross receipts of the banks from borrowers and the community, would be, by privilege of law, just double the legal interest on their capital. This is in addition to all other fair profits derived from discounting on deposits, or in any other less legitimate mode. If they issue three times the amount of their capital (as is authorized by law) instead of only twice the amount, then still another 6 per cent. would be added to their gross receipts; and if, instead of retaining their whole capital in specie, (as supposed) they should keep only one-third of it, (which is full as much as is usual, even for specie-paying banks,) then 4 per cent. more on the whole capital would be made by lending the proportion thus released.

#### VIII. *The partners in the banking business who gain, and those who lose the profits.*

But though the law of the land and the usage of the banks would permit all the above supposed amount of gross receipts, as interest on the capital stock and circulation, it is very true that the gross income, and still more the net dividends, of the banks of the United States have never approached to such an amount of annual profit. Indeed, banking in this country has been on the whole an unprofitable business to the stockholders as well as injurious to the community. The Bank of Virginia, with all its branches, from its institution to this day, has not cleared 6 per cent. per annum on its capital. But that is because, in the first place, there are so many banks (or banks having so much stock, which comes to the same thing,) that none of them can exercise any thing like the amount of privileges that the law allows to all; and where the plunderers are many, compared to the booty to be gained, the dividends must be necessarily reduced in proportion to the number of sharers. Next, the officers and directors of the banks have been so improvident and careless, that the greater part of what might have been net profits to the stock-holders has been squandered in high salaries to officers (often sinecurists, or incapable,) and other unnecessary expenses, lost by numerous bad debts, or stolen by bank functionaries. Thus, though the people have paid enormously for their support and profit, it may well be the case that the stock-holders have received even less than in other unprivileged directions of labor and investments of capital. Yet, the small amount of general or average profits made by the stock-holders of banks is often used in argument as evi-

law (of last February) of the Virginia legislature, which *repealed*, as being too strict and burdensome, the previously existing provision that the banks should keep on hand as much specie as *one-fifth* of their amount of notes in circulation. This restriction was repealed almost without opposition; and now the banks, released from the requirement of law in this respect, and from the demands of note-holders, by the "suspension of specie-payments," may issue \$100 in notes for one dollar of specie, without any restraint whatever, except such as the interest or the fears of the banks themselves may impose.

dence that banking privileges are not too great, and that the country has paid very little for the public benefits of the banking system. So because highwaymen and pirates generally live and die poor, it might as well be contended that they had taken but little in their course of business, and that society had suffered nothing from the particular direction and long continued exercise of their industry.\*

If by the profits actually received by stockholders were to be estimated and determined the measure of privileges to be allowed to the banks for their (supposed) benefits to the public, and for the fair remuneration for capital so invested, then these privileges and profits have been too low, and ought now to be increased, instead of being limited and reduced. The stock-holders, as such, on the whole, have derived but little profit, (less indeed than legal interest,) from their stock; and, as a body, have been almost as much cheated and plundered as the community in general, by those who enhance the prices of stock, and direct banking operations, and as borrowers and speculators, or stockjobbers, continue to appropriate to themselves the rich harvests of gain. The banks have been managed not for the benefit of their stock-holders, as much as for that of their officers, directors, and the borrowing, speculating and stock-jobbing classes in general. And who are they who constitute the great body of stockholders? Not merchants, or bank directors, or officers, or brokers, or stock-jobbers. All these have too much need of their money for other active business, yielding larger returns, to hold much, if any, bank-stock. A few shares, merely to make one eligible for the office of director, are the most that any of these persons would care to hold permanently. They all prefer to persuade and induce others, who have more spare money and less information of the tricks and hazards of the game, to hold the stock for their use and benefit. Though some few rich capitalists are large stock-holders, more generally they belong to the poorer than the richer portion of property owners. The stock is bought (and generally at prices much advanced by the false pretences of stock-jobbers) as permanent investments for widows and their children—by fathers for their daughters, as a provision for them when left friendless orphans, and otherwise destitute—by patrons and directors of charitable institutions, and designed to support the already destitute and miserable—and by numerous individuals of scanty means, to the amount of their small accumulations of earnings, made by hard labor and strict frugality. These are the different classes of people by whom, or for

whose benefit or support much the greater part of the bank stock is held, and for whom the purchase was made upon confidence that the then usual profits of the stock would be permanent; and under the belief that the connexion with, and the guardianship of, the government, and the high character of the presidents and directors of the banks offered an ample guaranty for the faithful care of the property so invested. And the great losses, or absolute ruin, of all these innocent and helpless sufferers, which occurs whenever an expanded banking system bursts, (as in late years and now,) forms one of the most deplorable and afflicting of all the unhappy and sure results of the general operation. Further—the numerous and wretched sufferers of this class have to bear twice as much as the average loss upon the stock. For their purchases are invariably made in stocks of the best established reputation, yielding, then and long before, good and regular dividends; and of course the price of such stock being at the time much above par. Should the price, after the purchase, rise 20 per cent. higher, these owners never sell for the advance, but cling still more anxiously to what appears so valuable a property. It is only when the stock has fallen perhaps to one half of what they bought at, and is yielding no returns whatever, that these deceived and impoverished and suffering stockholders are forced by necessity to sell out, to avoid starvation, if that is their all—or, if the possessors of other means, for fear of entire loss of the value. Then the stock is bought by those who rely for its resuscitation on the future and usual dishonest operation of the system, and the support of it by the laws; and when, by such means, the price again rises, these latter holders know that it is time to sell out to a new race of other credulous dupes. Thus, the class of poor and cheated stock-holders, not only lose in proportion to their very large amount of the whole quantity of stock, but also they suffer the utmost by depreciation of market prices. Thus they bear, in common with the community, a full share of the cost of the system; and the rich and numerous prizes in the game are won by other classes. Skillful stockjobbers receive the benefit of the changes of prices of stock; and the *paper kings* who direct or influence banks, and the borrowers for adventurous speculations, and the bankrupt debtors, are they who have enjoyed nearly all the profits, and the squandered booty of the banks.

But the most deluded, stupid, and heaviest loser as a stockholder in Virginia, is the state itself—though deriving (apparently) so large a part of its revenue from the profits of banking. To obtain this benefit, the state exclusively bears all the enormous expenses of legislation for banks, and of that of administering justice for, or upon, or because of the proceedings of, banks. These offsets alone would take off a very large share, if not all the clear profits on the state's stock. The far greater injury sustained by the commonwealth, and the people at large, belongs to another part of the subject, and will be considered hereafter.

But it is full time to return from this digression, and anticipation of results, to the banking system where we left it, in the highest possible state of prosperity, for itself, and apparently for all the interests of the country.

\* Let not the ascription of a particular evil to the number of different banks be construed into an expression of preference for centralization, or the system of one bank only, with branches. Under a proper and honest system of free banking, such as will be presented hereafter, several banks would certainly be better than one only. But upon the present system—which is almost as bad for the stock-holders as for the country, and profitable only to stock-jobbers, bank officers and sinecurists, bank borrowers and bank thieves—it is truly stated, as above, that the more numerous the banks, the greater the waste and expense to the stock-holding interest; and the less the amount of profit of every kind that will fall to each share of those who are entitled by law to the dividends.

### IX. *The most prosperous condition of the banking system.*

In the previous view taken, we had reached a point in the progress of general banking in which the operations would be the most highly profitable to the banks, and, for such profit, the least injurious to the public that could be expected under any such circumstances. It is true that, even on this supposition of the most perfect condition of things for the system, the public interest, (other than the separate banking interest) *had gained almost nothing* by the change. With all our horror of a currency either exclusively or principally of paper, (because of the certain and inevitable evil tendency and consequences,) we may freely admit that, on our supposed case, no very important injury has yet been sustained by the country, when its banking operations have only gone thus far, and when no foreign or other cause has yet assailed the unsubstantial fabric of an almost exclusive paper currency. The condition of things supposed above was, that the banks had cleared the additional profit of the interest of 5 millions of fictitious paper issues, and that the public had so far lost nothing, and had gained all the benefits and conveniences, such as they may be, of a paper currency substituted for a metallic currency.

The only important gain, so far, by this entire change of currency, is the new paper money capital of 5 millions created and employed by the banks. The interest on this newly created capital is so much clear profit to the issuers. The public has gained only so far as the whole community is always benefited by the fair profits of each individual; and as the increase of individual wealth is also the increase of public or national wealth. The issue and use of this 5 millions of paper, in addition to the amount of the capital stock of the banks, has permitted, and indeed compelled, the exportation of 5 millions of specie. Now, by thus dispensing with the costly use of this amount of specie, as currency, and by substituting a currency which costs almost nothing to supply at first, there is made an annual saving to the community equal to the interest of the 5 millions of specie, or the price paid for its former use.\*

\* It is to give full weight to the advantages claimed for banking by its advocates, and to avoid raising any doubtful objection to them, that the above admission is made, that a paper currency is much *cheaper* in use than a metallic currency. Our argument can afford to yield this point, and therefore we do not care now to dispute it. But, if fairly examined and compared, we think it not an improbable issue that a paper currency would be found to have not much, if indeed any advantage in regard to cheapness. The price paid for a bank currency is, not merely (as usually counted) the cost of the paper, the engraving, the printing, and signing, and the repeating these as often as required by the wearing of the frail material. This is the cost to the bank only. To the community, there are other and much greater sources of loss, in the greater liability of paper money to be destroyed by fire or other accidents, (all of which losses are so much clear gain to the banks,) and the cost of the misdirection and waste of skill, talent and labor, in counterfeiting, and the losses by receiving counterfeit notes, the cost of executing justice upon such new crimes, and also the evil to society in the inducing of such crimes. All these different ingredients of price

Now the question is, and the only questionable matter, whether this amount of gain to the nation is more or less than equal to the risk and danger incurred by giving up the use of a substantial metallic currency, having an intrinsic value that can never be lost, or even materially impaired, for the unsubstantial, uncertain and fluctuating value of a paper currency. If the true answer should be that the profit of the substitution is indeed greater than compensates for the danger, then there is a balance of national benefit and gain. But if not, then is there no public or general benefit, nor any other benefit except to the banks, which create and issue the paper money. There is high authority for the former opinion; but we entertain no question that the latter is more generally true, even if the difference of cost of the two currencies be never so great.

### X. *Some exceptions to previous general positions and statements.*

From the wish to be as concise as was consistent with clearness, we have passed over, without alluding to them, some exceptions to general positions, and partial deviations from general conditions of things, which every thinking reader would allow for and supply, but which may be seized upon as false, and as vital objections to our general statements, by that class of persons who always seek to find and to oppose merely the weak and immaterial, and not the strong parts of an argument. To exclude such cavilling, it will be mentioned here, once for all, that, in our illustrations by supposed cases, we have described things as entire and complete, which in fact can never be otherwise than incomplete—and quantities and values as fixed and known, which are unknown and continually fluctuating in amount. Thus—though there must be at any one period a certain amount of currency necessary for the healthy and proper exchanges, trade, and business of a country, the amount so needed can not possibly be known; and even if ascertained fairly for a certain day, it would be different perhaps the next day—expanding with the growth and prosperity of business, and contracting under adverse circumstances. And the actual amount of currency, if left to itself and not affected by the abuses of paper issues, will be regulated and properly and speedily adjusted in every commercial country; so that there will never continue long either a deficiency or redundancy of currency, for the exchanges and healthy trade of the country. If the currency be more plenty than in the commercial world generally, it will depreciate in value, and be sent abroad to be used where more highly valued and prized, until the balance is restored by the exportation of the redundant quantity. If an exclusive metallic currency be deficient in amount, it will appreciate, and make it profitable to bring specie from other countries where it is cheaper, to be used in purchasing commodities in the country needing specie and

would probably make up an annual amount not less than the interest of the whole circulation, which, added to the wearing, would constitute the annual cost of an entire metallic currency.

therefore paying for it a higher price. And thus, if legal restrictions and monopolies, and excessive issues of paper money did not prevent, the amount of currency in any country would never injuriously vary from the quantity needed.

Again—we have supposed the case of the entire currency of the country having been changed from metallic to paper, which could not possibly be true, so long as the paper is convertible to specie on demand from the banks. The greatest possible extension of banking operations, and with the aid of paper of the smallest denominations, and the most perfect state of popular confidence in the banks, could not effect so complete a substitution as we assumed merely for illustration, and to avoid embarrassing the general operation by continued reference to the partial exception. Instead of the whole (formerly) metallic currency of 10 millions being substituted by paper, it would be more likely that about 9 millions would be so substituted, under circumstances the most favorable to the operation, and that one million of specie would still remain in circulation, and passing to and from the banks, as well as between individuals, to serve for change, and for small dealings. This quantity of specie would vary according to the size of the lowest denomination of paper money permitted by the law. If there was no bank note permitted of less amount than \$5, the average amount of specie in circulation might be one to two millions in a currency of 10 millions. If notes for \$1 were permitted, and issued in plenty, every silver dollar would soon disappear, and not one-tenth of a million, and that in parts of a dollar, would remain as currency. And even this would vanish, if as small bank notes were issued as a substitute. If, on the contrary, no bank note under \$50 were issued, gold and silver would be necessary for all transactions of less amount; and as these (from their number) would very far exceed all larger transactions, that restriction on paper issues, alone, would keep half, or perhaps three-fourths, of the whole currency in specie. The proportion of the general currency which would continue metallic, whether large or small, according to the different circumstances named, would then be so far an exception and offset to the foregone supposition of an entire substitution of specie by paper.

#### *XI. Beginning of depreciation of paper money, and decline and prostration of banking credit.*

In the preceding pages we had traced the progress of banks of circulation to what their advocates would consider the highest possible state of their prosperity, and the best possible condition of the banking system. Next is to be observed the turn of the banking tide—which will as surely follow, as the ebb of the ocean must come after the flood.

The condition of things before supposed was, that the banks had filled the circulation of the whole country with their paper money, but had not permanently overflowed the channels—(because of the outlet of specie to foreign countries—) that they had thus substituted and caused the withdrawal from circulation of the specie, but had not, by still greater excess of issues, caused the depreciation of money to any marked

or considerable extent. It is manifest that the more of its paper money that each bank can use in making loans, and keep in circulation, the greater will be its profits. As surely, then, as men and banks are governed by self-interest more powerfully than by regard to the interests of others, so surely will each, and all the banks, strive to expand their circulation. And this will be the more certainly and injudiciously done, if there are many banks, than if few, or but one. For, in the former case, each separate bank acts for its own separate interest; and not only in disregard to the general interest of the country, but even in disregard to the general interest of all the banks. Their conductors, (unless indeed not totally ignorant of the first principles of currency,) know very well that *all* the banks cannot (while continuing to pay specie,) add very greatly to the already expanded paper currency. They can only substitute by their paper the specie currency, and add a small excess—which effects we have supposed already produced. But, still, each bank will strive to make its own notes form as large a proportion as possible of this substituted general currency, and of the excess which existing favorable circumstances may permit all the banks to put into circulation. This continually operating tendency to the greatest possible expansion of the currency, (and that a paper currency, almost exclusively,) must, of course, always keep some excess of paper in circulation. If the currency were metallic, or any portion of it that could be spared from the ordinary business of trade, even that slight excess would soon find its way abroad. But paper money cannot be sent out of the country, and therefore the excess remains. The reason why the excess cannot as yet become very considerable is, that the bank notes are as yet redeemable in specie; and if the effect of their excess in circulation is perceptible in causing depreciation of the value of the currency below that of the foreign value of specie, (which is the certain effect of excessive issues,) the notes will be presented to the banks for specie as fast as they are issued in loans, and the specie will be sent abroad, as long as it can be so obtained, and the whole circulation is in excess.

But if nothing worse, more imprudent, more injudicious, or more dishonest, were done by the banks, than the *strictly legal* and *very cautious* course supposed above, to produce reverses to them and great disaster to the country, external causes will sooner or later bring about such results. Various agencies, of frequent and certain occurrence, first affecting foreign trade injuriously, will be extended to this country, so as to require from it large payments, and which can be made only in specie. The particular cause of the demand may be either foreign wars, or other operations which create a greater demand for, and of course a higher price of specie abroad; or it may be that heavy debts have been contracted to foreigners by the banking country, in over-trading, which is a certain result of the previous delusive appearance of general prosperity, and prospective large profits, and which every season of bank-paper expansion always and necessarily produces. It may be the paying the price for any other kind of foregone national folly. If we consider Virginia as the banking country in question, it will never be at a loss for the production of such



a demand for specie. For, whenever a suspension of bank payments occurs in any of the more northern states, it necessarily causes a difference of price there between specie and bank paper, and, consequently, a demand for specie upon our banks, as long as they have notes in circulation, and continue to pay them. Well! Suppose the existence of any one of these many and often occurring external circumstances, (and omitting all supposition of injudicious banking, unusual risks, or fraud, at home,) and let us trace the necessary effects. We had supposed the banks to have 5 millions of specie in their vaults, and 10 millions of paper circulation and liabilities. If they should continue to pay them, their notes will be presented for payment by those who need to pay debts, or make purchases, or sell specie abroad, until the banks' supply of 5 millions will be exhausted; still leaving in circulation, and coming in fair payment, 5 millions more of their paper, which the banks will not be able to redeem on demand; and, as *specie-paying banks*, the institutions would be deservedly deemed *bankrupt*, though they would not be *insolvent*, and, indeed, might have all their capital in safe debts and securities. But to reach this state of things, (even if permitted to be reached at all,) would be a work of time. It would be long before even half the notes, spread over a wide circulation, could be brought back and presented to the banks for specie. The banks would, in the mean time, exert all the means they possess, (and they are many and powerful,) to discourage and prevent demands on them. Not one of their numerous borrowers and dependants would dare to demand his just due of specie for a note, even when its value in circulation should be less by 5 per cent. than the specie it promised, and which it could then command from the issuer. And every other less dependent and submissive noteholder, who would make and enforce such a demand, would be denounced, by all under bank influence, as if an enemy to the public weal. To prepare for such demands, also, the banks would commence to "curtail" their "accommodation" debtors, and draw in their debts—which mostly (by the abuse of the original and proper discounting system,) had been of such long standing, that the demand for their payment, or even partial reduction, would be entirely unexpected, and unprepared for in most cases. All these curtailed debtors, and all those who were thus debarred from becoming debtors to the banks, would unite in raising a loud clamor that "the country would be ruined if the banks continued to pay specie;" and so general would be the outcry, that the banks, claiming (as always in such cases) to be moved, not for their own interest and profit, but "for the benefit of the community," and professing to be actuated solely by beneficent and patriotic motives, would stop paying specie; and refuse boldly, and in defiance of all legal and moral obligation, and even of common honesty, to pay any more of their notes, (their then lying and cheating "promises to pay,") with which they had filled the circulation, while the public confidence in the responsibility and good faith of the banks was yet unimpaired. And then will follow the disastrous state of things which existed during the general bank suspension of 1814 to 1819, and of 1837 to the present time;

and which will yet continue to a far remote time, before specie payments will again be truly and fully resumed by our banks.

Whenever such a high-handed act of fraud and robbery of all creditors, and of the public in general, occurs, at first every voice that is heard joins in commendation of the banks for their "noble stand in defence of the interests of the community"—and the bank authorities, stock-holders, mercantile class, and all the borrowing class, (whether in *esse* or in *posse*,) and the newspapers, all unite in this expression of opinion, and swell the cry, until it seems, in the absence of all expressed dissent, to be the voice of the whole community. All other persons remain silent, intimidated, and passive. If any rare exception should be found, in an individual daring to denounce the bank suspension in the deserved terms, and to exert his legal rights as a creditor of the banks, and enforcing the payments of their notes—he, who thus takes the part of his country and the laws, and of common honesty, against falsehood and fraud, will be stigmatized by the bank powers and all their slaves, as if dishonesty and opposition to dishonesty had changed places—and as if he were advocating and aiding fraud and pillage of the country, and the bank party opposing the procedure.

And if any portion of the people should indeed venture to oppose this enormous fraud of the banks, by enforcing their (as yet) legal claims, such contests must soon cease. For, as speedily as possible, the government steps in, and pardons the past fraud of the banks, and legalizes the course for such time to come (by renewed subsequent extensions of the limit,) as the banks may require. This has been the course again and again of the legislature of Virginia, and of nearly all the other states of the union; and such is the legal condition of things at the present time.

## *XII. The proper course for, and the actual course pursued by, suspended banks.*

After such a fraudulent stoppage of payments has been effected, and legalized by the government, the banks may then choose which one of two courses to pursue. If, in truth, desirous to come as early as practicable (under cover and by aid of their legal protection) to a condition to comply with their engagements to creditors, they will not make any new loans of their then irredeemable paper, (of which every note issued after suspending payments is an additional act of fraud on the public,) and will gradually collect the debts previously due to them. Every debt so paid to a bank in its own notes by a former borrower, would so much lessen its previous paper circulation, and the amount of existing obligations. And when the amount of debts was reduced to the amount of the actual (and existing) bank capital stock, and the deposits regularly in the bank—and when the notes still in circulation promised no more than there was specie in the bank, then the bank might safely resume specie payments, because able to redeem every note that could be presented for payment. It is very true (and herein lies the great and only important obstacle to this course,) that this remedy would cut off the source of the profits made by the banks upon their excess of circulation; and so it ought. Their solid and fair business, of dis-



counting to the amount of their capital and deposits, would not be impaired—and to that extent is as far as a bank can go, with a depreciated or discredited paper circulation, unless in a state of suspension, authorized and sustained by law. But this, the only proper and honest course, has never been, and never will be resorted to by suspended banks, except to such extent only as is compelled by fear of the withdrawal of all indulgence of law, and support by public opinion, and of the results of the forfeiture of all remains of public confidence in the responsibility, honesty and ultimate solvency of the banks. In addition to the profits of the banks being greatly lessened by their pursuing this proper and honest course after and under protection of suspension, the debtors of the banks, and the merchants and traders who desire to become and to remain debtors, would exclaim as loudly against a suspension of lending, and even the most gradual curtailing of old debts, as they had previously done against the banks continuing to pay specie. These people, together with the banks, govern and prompt the newspapers, which again influence and shape the opinions of the great body of the deluded and pillaged community—who have no interest in sustaining, and every reason for opposing, this fraudulent banking system. It follows, therefore, that the banks are always justified in taking the other course, that is, of continuing to cheat the community, by continuing to lend irredeemable paper, because it is supposed that this course is absolutely required by the interests of the country at large.

But in Virginia there is yet a more operative reason, than all the influences just referred to, why the government should always sustain and aid the banks in all their fraudulent suspensions, and other acts of violation of right and honesty, instead of protecting the community against their rapacity. The commonwealth of Virginia is the chief partner—interested to nearly half the amount of the stock in trade—of all the important banks in the state. The income of the state treasury is derived in great measure from the profits of banking; and if these profits were at once suspended, the state would be deficient of half its revenue, and heavy additional direct taxes would have to be forthwith imposed on the people. Of course, the steward of the great sleeping partner, the government, always yields to the representations and advice of the acting and more capable and cunning partners in trade; and therefore the laws regulating and indulging suspended banks are in just such form, and for just such purpose, as the presidents and other masier spirits of the banks choose to have enacted. The course aimed to be thus sanctioned, and which has been heretofore and is still pursued by the banks, is to profess and pretend to reduce their liabilities, and as rapidly as is consistent with the public welfare—but, in fact, to make the reduction as little and as slow as possible, for the sake of their own gain. The slow rate of reduction, and of return to honest responsibility, under the most imperative circumstances, will be hereafter seen.

**XIII. The mode and rate of bank "curtailing," with the view of resuming payments.**

We do not mean to deny, that after the banks have suspended payment, there is great profession made, and many and strong manifestations

also in particular cases, of great reduction of debts to the banks, which, it is obvious to all persons, *must* be made, if the banks are ever to resume payment, without their bankruptcy being an immediate consequence. But the profession is but a pretence, which is as shallow as it is false. But for the fear of total discredit, and the causing such an out-burst of public indignation as would tend to destroy their iniquitous rule and dishonest gains altogether, the banks would, after suspension, increase rather than diminish their operations. For against such increase, by a suspended bank, there is no valid check whatever. Ever since the general suspension in 1838 the banks have *pretended* to be reducing, as rapidly as possible, their business and liabilities. Yet in all these four years the whole amount of debts due to all the banks of Virginia has been reduced only from \$18,000,188 to \$15,359,041, or a little more than one-seventh. If no restraint whatever had been imposed by law, or moral obligation, or by any other duty than merely that to the stockholders of making no loans to doubtful debtors, it might have been supposed that the pressure of the times alone would have induced the debtors themselves to contract their "accommodations," and their business, as much as in the small ratio stated above. For, if the preceding year of universal mad speculation and adventure, produced and fostered by excessive bank issues, had required but 18 millions of bank loans, surely the reduced business and spirit of adventure, of the since sobered community, might have been as fully supplied by half that amount.

But even of the small reduction made in the amount of debts to the banks, the larger portion has been laid where there should have been no reduction whatever, (if any new debts were permitted to be made,) that is, on the *business discounts*, required for real transactions of trade, and the purchase of the great agricultural staples of the country. These, the proper and legitimate and safe banking operations, and always beneficial to the community, have been greatly restrained, and discounts for them often refused, that the illegitimate and dangerous *accommodation* line of loans might be the less curtailed.

This important proof of the insincerity of the promises, and hopelessness of effective results of voluntary bank reform, is abundantly set forth in the following statement; which is made up from the official reports of the banks to the legislature of Virginia, published in the journals and public documents. We present for comparison the general aggregate sums from the reports of December 1st, 1836, and of January 1st, 1841, because the first was the report of the time of greatest possible expansion, (and for the year preceding that of the suspension of specie payments,) and the last, made four years after, was during the continuance of the suspension for nearly all the time since the first report, and when continued "curtailing" of debts, and reduction of bank liabilities, were professed to be, and should have been, pushed during that whole interval of time.

On December 1, 1836—

The whole outstanding debts, due to all the banks of Virginia, (omitting cents,) amounted to	\$18,000,188
Whole amount of circulation (bank notes out)	8,980,691

Whole amount of specie - - - 1,669,634  
Or one dollar in specie for every 5.39 of paper  
money in circulation.

On January 1, 1841—

Outstanding debts - - - \$15,359,041  
Circulation - - - 7,503,530  
Specie - - - 2,422,192

Or one dollar in specie for every \$3.05 of paper  
money in circulation.

From these official reports, then, it will appear, that during four years of the continued operation and pressure on the banks of the strongest of all inducements for "curtailing," and reduction of liabilities, (saving self-interest, which opposed,) aided by the so-called *compulsion* of law, the banks reduced the total amount of debts due to them only a fraction more than *one-seventh* of the amount at the previous time of greatest expansion. The reduction of the irredeemable paper currency of all the banks, during the same four years of great effort, was only about *one-sixth* of the first amount; and the specie on hand is still only one dollar to \$3.05 of paper circulation. If then, such is the extent of bank reduction of liabilities, and improvement of responsibility, produced under such various and cogent reasons for action in these different ways, we leave it to the reader thence to estimate, or infer, how long it will be before the banks, by such a course of reformation, will be enabled to pay in specie, and comply with their now violated obligations, and re-construct their justly forfeited credit and reputation.

It has taken the banks four years to reduce their debts by as much as one-seventh, and their paper circulation by one-sixth, of the former bloated and excessive quantities of both; and these small reductions have been considered (by paper-money advocates,) as so distressing to the community as to justify and make preferable the continuance of all the evils of irredeemable currency, rather than to reduce bank debts even so rapidly. Yet the first blow of the banks' suspension in 1837 depreciated all their notes 10 per cent., and thereby robbed the then holders of the notes (nearly 9 millions in amount,) of just that proportion, or about \$900,000; and, in 60 days, that depreciation reached 14 per cent.; and, for exchange on New York, (requiring specie payment,) there was actually paid a premium of 17 per cent. Yet this enormous and instantaneous confiscation of the property of the note-holders was scarcely thought of as a wrong to them—and the act which produced it was hailed as a measure of unmingled relief and benefit to the community!!!

That the general amount of debt to the banks has been so little reduced is not owing to the want of abundance of curtailment actually inflicted upon individual debtors. But while the older banks have reduced their respective shares of the whole outstanding debts, there have been established a new bank with branches, and new branches to the old banks, which have added nearly as much to the debt as the others had operated in reducing it. This is not worth naming, except to avoid the appearance of mistake. We have not distinguished, nor do we care, which bank has most reduced or which most increased its business. We have spoken of the whole banking operation together, and of all the debts to all the existing banks, without regard to the respective shares of the different banks.

\* Further—it may also be true that each separate bank has been continually and rapidly "curtailing" their debtors, (or some of them,) during all these four years. But if so, the general result shows that they have been, on the whole, nearly as fast making new loans to other persons. Now this double operation, (besides deceiving the public into a belief of the progress of general reduction,) serves in two ways to increase the influence, and forward the objects of the banking interest. The "curtailed" debtors, when made to feel the pinch, cry out with all their might against the banks being compelled to adopt this harsh course, by the requisition of law, and to prepare for paying specie; and all the influence of their class is used to prevent any contraction of circulation and of loans, and of course to continue unabated, for all future time, the dishonest policy of suspension by the banks. Next, the hungry class of expectant borrowers, by receiving new loans, or by the hope of obtaining them, are made fully as zealous for the continuation of that course of banking policy, upon which the extent of their "accommodation" will depend. Thus by curtailing old debtors, that class of bank slaves are made the more zealous and active in the service of the masters; and by making new loans, the equally zealous services of another body of partizans and slaves are secured; and also general support gained from all who only *hope* to become borrowers, though not yet on the favored list.

There never was a more false and even ridiculous pretence than that which is generally received as true, that the continued operation of the banks, on any thing like the same scale of expansion, is necessary for the benefit of the community, or even for the benefit of the debtor class alone. If all the debts to banks which have been incurred in the last six years, had been denied, the applicants for the loans would now generally be much better off than they are. And those persons that were already in debt in 1837, and who have not yet paid, perhaps have not been benefited by such long continued indulgence. Yet this matter is always spoken of as if the privilege of contracting debts, and of continuing in debt for the longest time that the creditor will permit, is the greatest of all possible benefits to individuals, and the operation the most vitally important to public and general interests.

#### XIV. Effects of bank suspension and irredeemable paper currency.

When the banks all first suspended payment in 1814, under the pressure of a foreign war with a formidable power, the case was novel, and the public were easily deceived by the false and shallow pretences then set up by the banks in excuse. It was not (so it was alleged) that they were not able to pay their notes, but that the specie, thus paid out, regularly and rapidly flowed to the enemy's possession. The latter part of this assertion was as true as the former was false. The excessive issues of paper here had served to depreciate all the currency—and also our armies required specie in Canada, because bank notes were of no value there. Therefore, the specie flowed from the country where it was depreciated, and where it was pushed away by paper to foreign countries

where it commanded a better price, or where it had no such inferior substitute. Thus the banks closed their vaults, not for their own gain, but (as always) on the score of *patriotic devotion to the welfare of the country*—and we, the people, were foolish enough to believe this excuse, and still to confide in the banks' retaining the specie which in fact they had already parted with, and were trading upon as so much additional capital. Thus retaining the misplaced confidence of the people, and having in their power the impoverished and embarrassed governments (both state and federal,) who were willing to justify government loans to any amount in irredeemable paper, the banks were enabled to play a most profitable and dishonest and treacherous game, for some years, when it closed, as the present suspension will close, by causing far more private bankruptcy, distress, and destruction of property, than if the banks themselves had been pronounced and proceeded against as bankrupt, as they should have been, when they first stopped payment.

During that first suspension, by the stimulus of excessive bank issues and redundant circulation, (to which there was no check whatever,) the whole country was made drunk with the spirit of speculation. What was actually the depreciation of redundant paper money was mistaken for a rise in the value of property, of which the prices of course advanced nominally in proportion as the value of the currency depreciated. This gave a new and still increasing spring to speculation; and prices of land in Virginia rose to double, quadruple, and in many cases to ten-fold the previous rates, and this, too, during a time of war, and of general pressure and embarrassment, and when no kind of industry was remunerated, except the making and issuing of irredeemable paper money. Thousands and thousands of individuals were greatly injured, or completely ruined, by buying property at these speculative prices, which afterwards fell, because of general pecuniary distress, to less than the former real prices. The whole population was disordered, and a very large proportion injured in business habits, morale, and in happiness, by this national fever of excitement, which benefited none but the few most cunning or fortunate individual players at the game of speculation, and the banks, whose dividends of profits was as much enhanced as the general rate of profits was lessened. At last, however, the settling day arrived. The losses of the people were beyond computation; and even the banks, who had done all the mischief, had been such injudicious lenders and spendthrifts, as well as cheats and pillagers, that they were for years after in a state of real though not nominal bankruptcy. After having divided enormous and unprecedented profits, for some years thereafter the banks of Virginia could pay no dividends whatever.

The present suspension differs from the first in one important respect. The *public confidence* which the banks then enjoyed, and so greatly abused, they no longer possess, and never can again acquire. No individual now believes in their ability to pay, as in the former suspension was believed by nearly all. Before the beginning and even after the termination of the former suspension, there was so much confidence in the ability of the banks to pay, that few individuals cared to draw specie from them on that ground.

Now, if they ever again open their vaults, and, in good faith pay all their notes and deposits, they will be soon drained of all their specie, and then remain undeniably bankrupt, because not able to meet numerous other demands. The banks know this, and will not dare to attempt resumption unless compelled; and to resume safely they must be able to pay in specie "dollar for dollar," for all their notes and debts. Therefore the late recent short-lived procedure was but a pretended resumption, in which the banks avoided making the payments they professed to offer, by disingenuous tricks and contemptible evasions, and which resumption (so-called) they could not maintain even in that discreditable manner. They will probably never resume payments again, in good faith, and cannot possibly continue permanently to pay their notes, if they should so resume.

(To be continued.)

#### THE GREAT DEFECTS OF THE AGRICULTURE OF LOWER SOUTH CAROLINA.

To the Editor of the Farmers' Register.

Charleston Dist., S. C., March 7, 1841.

I am unwilling to trespass upon your time, which must of necessity be much occupied by a large correspondence, but trust you will appreciate my motives in asking you to publish in your Register, for the information and benefit of your southern friends, a history and description of the corn fields in lower Virginia.

You are doubtless aware that the city of Charleston not only receives no supply of corn from her back country, but that frequently she supplies the country from her importations from the states north of this. A country like ours, thus obliged to obtain its supplies of provisions from a distance, must necessarily remain poor. Our highlands yield from ten to twenty bushels per acre; the latter quantity is considered a good yield. I doubt whether the average product of the whole low country below the falls of the rivers will exceed twelve bushels per acre.

If you have access to a copy of Mills' South Carolina, you will perceive that the map of this district (Charleston) indicates a great number of swamps, extensive tracts of low grounds on the margins of the numerous creeks which feed our rivers. With the exception of those swamps which lie accessible to the tide water, and beyond the region of salt water, none of these low lands are cultivated. Occasionally a planter is enterprising enough to subdue a small portion, and if the season prove good he is successful in raising corn; but unless a general system of draining should be adopted, it is impossible to secure even those few spots. I think that the combined efforts of the planters on those swamps would enable each to secure to himself a permanently valuable field of corn. I have long thought that the draining of those swamps would also contribute materially to the health of the neighborhood. Do the corn fields of lower Virginia lie in such reclaimed swamps, or are they still wildernesses? And if the swamps have been subjected to cultivation, has any amelioration of the public health been thought to follow?

The exceedingly fluctuating price of cotton 1

am afraid will keep us for ever poor. No one will plant corn when cotton offers such splendid prospects; and when the price becomes depressed, we fancy ourselves obliged to plant more cotton in order that we may make up for the loss in price by an increased quantity. Thus cotton is our grand staple, before which every thing bends. We plant of our poorest lands just as much as we think will furnish barely corn enough to supply our wants; if that fails we have recourse to Charleston. Of course we never have a surplus. This, the vice of the large planters, seems contagious—it is a universal error. A few years since I know that poor men, who should have sold corn, were obliged to buy it at two and two and a half dollars the barrel [bushel?]. Is it wonderful then that our splendid enterprises so frequently fail?

I have made several small experiments with lime, with a favorable result, but have not had the pleasure of seeing any man in the neighborhood. I regret this as much on my own account, as on account of the indication it gives of the low state of agricultural enterprise among us. I have no skill in managing, and the digging of lime is with me a prodigious labor. If any of my practical neighbors would undertake the work, they would doubtless devise schemes for facilitating the labor. If you will tell us occasionally of increased productiveness of cotton from its use, you might stimulate us into using it. You cannot influence us so long as you speak only of its results on corn, wheat and clover.

In attempting to reply to the inquiries of our correspondent, we must premise that we know (from personal observation) scarcely more of his region of country than he does of ours—to which he is evidently a total stranger. We have seen nothing of the lands of lower South Carolina, except in the mere glance afforded by the rapid passage upon a railway. But judging from that very insufficient view, and still more from what we have heard of that region, we were strongly impressed with what seemed to be ruinous errors in management, and astonishing neglect of means and natural facilities for agricultural improvement, and consequent profit. It would be presumptuous in the extreme for us, with such limited observation and means for information, to attempt more particularly to point out errors, or to prescribe suitable remedies. For the former we shall rely for facts entirely on our correspondent and other South Carolinians, who have heretofore published statements and just denunciations of their bread-buying system.

The lands of lower Virginia, which furnish a large surplus of the corn which is exported, (after furnishing a plenty for man and beast through this region, where the corn crop supplies the almost universal food,) is generally quite as poor and unproductive as our correspondent describes the lands to be in lower South Carolina. Excepting the marled lands, (which, as yet, form but a small

part of the great body,) the average product of all the lands of the tide-water region of Virginia cannot exceed 12 bushels of corn to the acre; and on numerous farms, of which corn is the great and almost only market crop, the product does not exceed 10 bushels. Many persons throughout their lives cultivate considerable proportions of their lands yielding not more than 7 or 8 bushels of corn, and making no other field crop for market, who yet have continued to live, and some of them to grow richer, upon such returns, and to furnish something of their surplus corn to supply the planters of South Carolina. Now these, and even the best of them, are miserable products, and indicate a wretched and unprofitable condition of agriculture in lower Virginia. But the useful inference which may be drawn from the fact is, that if our cultivators here live, and thrive, by raising corn for sale on such poor lands, it is certain that the planters of South Carolina could do much better by raising corn *for their own consumption*, even on lands which are no better. So great is the difference between a planter's being his own provider of what he is obliged to have and to consume, and being the purchaser of it from abroad, that he could better afford to raise his own corn, than to buy it at a regular discount of 10 cents the bushel below the market price. For there is generally at least that much increase of cost incurred in the charges of transportation and sale—and which, though paid by the consumer, and earned by the merchant, is entirely lost to the producer.

Except in Princess Anne and Norfolk counties, which are the nearest of our mainland to the seashore, there is no part of Virginia so low, and subject to water, as our correspondent supposes, and as is the case in the Charleston district. The lands of those counties require draining, and are therein as much neglected as any in South Carolina. But it is not because of being swampy, so much as the firm lands being almost uniformly level, and therefore, though dry in summer, they are saturated, and often covered, with rain water, during winter and spring. The higher tide-water counties, though having numerous swamps, are mostly of dry land, and the surface enough undulating to prevent too much wetness. Very little has been done to reclaim our swamps; and therefore it is not such land, except to a small extent, but the poor high-lands that furnish corn for exportation, as well as for home consumption. And very low prices serve to compensate corn-raising, for this great region, which furnishes but little else for market. At this time we cannot sell corn for more than \$2.25 the barrel (45 cents the bushel)

in the towns, or on tide-water; and to get that price, much corn is carted from the interior 10, 20 or 30 miles over bad roads. We have known corn on York river offered for sale as low as \$1 the barrel by the large quantity. These low prices, as well as the low general products, show very poor returns, as well as bad management. But, even if we lose sometimes by low prices, and cultivators perhaps lose always on the poorest lands, still, on a general average of years, products and prices, the cultivators of our corn-producing region are as well rewarded, and as thriving, as others; and on as poor lands in South Carolina, the planters could certainly do better, inasmuch as the corn would there be all consumed where produced, instead of part being sent to be sold at a distant market. It would be very far more profitable, and more necessary, in South Carolina. No agricultural country can afford to buy its bread—and still less at such heavy cost of transportation, compared to the first price, as of Indian corn.

So far our remarks have been made upon the supposition that the corn culture of South Carolina would be on land as poor as that described by our correspondent, or as are the unimproved or exhausted lands of lower Virginia. But there is no need of such unproductive culture being permanently continued, either in Virginia or in South Carolina. The Charleston district especially might be greatly and profitably improved in productiveness, by draining many of the numerous swamps, and higher and firmer lands, which are now greatly injured by excess of wetness. If this were done, even but to a partial extent, (but always properly and judiciously,) the public as well as private benefits would not fail to be very important. And if the calcareous manures of South Carolina were brought into use, (the almost universal neglect of which is so far even more remarkable than the neglect of draining,) the two improvements together would add more value to the agricultural products, general wealth, and general welfare of South Carolina, than millions of dollars could purchase. In short, if we may trust to our very limited information of the existing facts, we are confident that no part of the United States is more susceptible of being benefited by these two modes of improvement than a large portion of South Carolina.

Another matter of the highest importance is embraced in the inquiries above—the effect of drainage in improving health. Of such actual results we know nothing from personal experience—and not much from information as to particular facts. But there can be no question as to the general results. All of the great body of rich low but firm lands in Gloucester county was once a

swamp, and the inhabitants were then very sickly. Now, nearly all of that extensive and fertile body of land has been brought under good and careful cultivation, and the low-ground estates of Gloucester are among the most healthy on the tide-waters of lower Virginia. Still, even there, the drainage is far from being the most judicious or effectual—and there yet remain many obvious and fruitful sources of malaria and disease. On the borders of the alluvial flats of James river, above the falls, though a high and hilly country, the inhabitants were formerly very subject to autumnal fevers. The wide low-grounds of the river were then very insufficiently drained and guarded from the effects of inundation. Now, all these lands are well drained, well cultivated, and form one of the most fertile and admirably managed agricultural districts in Virginia; and the river farms are generally quite healthy, and at no time suffer from disease in any degree to be compared with what were formerly the annual and regular visitations.

When we saw the extent and magnificence of the city of Charleston, and saw and heard the evidences of the wealth of its inhabitants, we were the more astonished—nay, we could not have believed the fact, if on less sure testimony—that the whole surrounding country (saving parts of the sea-islands,) was almost an agricultural desert, in which tillage and husbandry were in the lowest state, and where malaria and disease held undisputed sway through nearly all the season best suited for agricultural labors and enjoyments. When it was stated that it was at great hazard of his life for a proprietor to spend even one night on his estate, from June to October, we did not know whether most to wonder that such a pestilential region had not been altogether abandoned—or, not being abandoned, that it had not been more improved, by proprietors who are noted for their general intelligence, wealth, and liberal expenditure. Even if we allow half that we have heard of the disastrous effects of malaria in the Charleston district to be abated for exaggeration, the remainder would make an amount of pecuniary loss, and of physical and mental suffering, which it is astonishing that any people can be content to bear, and that they should not exert every hopeful means for even partial relief.

We are aware that both these great modes of improvement above referred to are not fully available on every plantation, nor even in every considerable district of country. But the advantages of either one would be very great, in regard to the increase of products, and improvement to health. For, in the latter respect, general

marling, as a safeguard, is next in value to proper and thorough draining.

In answer to the last remark of our correspondent, we have to say that marl is fully as beneficial to cotton as to corn, and most other useful crops. It is more beneficial to clover only because lime is a specific manure for this crop, or an ingredient absolutely necessary to its life and vigor. But it is an unnecessary refinement to weigh nicely the comparative benefits of calcareous manure to different vegetables. Its main and great operation is to make bad soils good, and enable poor land to become fertile. And there is no valuable crop whatever on which this great operation will not be abundantly effective and beneficial.—ED. F. R.

#### ON THE PROPER NOMENCLATURE OF GRASSES.

For the Farmers' Register.

Dear sir :—By yesterday's mail, I had the honor of receiving a parcel from you, consisting of the Farmers' Register, vol. 9, No. 2, and several other of your publications, for all of which I beg you to accept my grateful acknowledgments. I perceive that you have transferred to the Register a hasty communication which I sent to Mr. Skinner, respecting the nomenclature of the grasses most familiarly known to the agriculturists of this region, and have also accompanied that article with some interesting suggestions, relative to a plan for obtaining a more accurate knowledge of the objects which are daily treated of in our agricultural journals. It is highly gratifying to see that you have taken up the subject in that point of view, as one of the first steps towards a useful discussion is, undoubtedly, to ascertain precisely what we are talking about. It is worse than labor lost to argue the merits, or demerits, of plants, under their local popular names, without a reference, at the same time, to the established scientific names, by which they may be certainly recognized in all parts of the civilized world; for those popular names are so various, and so often misapplied, that they inevitably lead to error and confusion. Your *projet*, or something similar, is the only mode by which the nomenclature of plants can be extricated from the chaos in which it has been thrown by popular synonymy. My letter to Mr. Skinner was hastily written, on the spur of the occasion, and is of course exceedingly imperfect; its main purpose being to determine the identity of the so-called "*Kentucky blue-grass*." The other grasses, therein mentioned, were merely enumerated as occurring to me at the moment.

I am much pleased to find that you have enlisted my friend, the Rev. Mr. Curtis, in this matter. You could not have found a better hand for the business; and I have no doubt, if your joint suggestions are carried out in the proper spirit, that our agricultural writers may all be speedily enabled to treat understandingly of

the plants, in which the farmers have an interest. By ascertaining their scientific names and giving them always in conjunction with the popular names, every intelligent reader will be able to know exactly what is meant, when plants are introduced to notice; and thus a world of conjecture, of error, and confusion, may be obviated. We cannot converse on objects, without some name by which to designate them, and distinguish them one from another; and it seems to me, that when names are to be learned, by any one, it is just as easy to acquire one new name as another, that a right name may be learned just as readily as a wrong one. There is even an economy of the powers of memory, in having one definite, universally understood name, for an object, in the place of half a dozen vague, and uncertain ones, although that one may be latin, and the others all vernacular. It is certainly, I think, as easy, for a mere English scholar, to become acquainted with a particular species of grass, under the name of *poa pratensis*, as to ascertain what is meant by the various epithets of "*Kentucky blue-grass*," "*green-sward*," "*spear-grass*," "*meadow-grass*," &c. And when once acquired, the learner has the satisfaction to know, that he can designate the plant by a name which is intelligible, precise, and distinctly comprehended throughout the civilized world.

At all events, I should say, the editors of agricultural journals, and their correspondents, would find it greatly to their convenience and advantage, to adopt the universal nomenclature of natural science, when treating of plants. They would then always be accurately understood, and not be playing at crosses purposes, in their discussions, by referring to different objects, or bewildering their readers in conjectures, as to what may be the precise things alluded to. As soon as the scientific names are acquired, and rendered familiar, the various local popular names, could be gradually collected, and annexed to the standard names; and thus a key would be furnished to the Babel-like synonymy, prevailing in the different districts of our widely extended republic. This laudable purpose, your proposition, as I have said, is well calculated to accomplish; and I heartily wish you every success. With the aid of such a botanist as my esteemed friend, Mr. Curtis, you will find no difficulty in effecting it. If each agricultural editor in our country would provide himself with what might be called a "*Farmers' Herbarium*," containing a good specimen of each plant that was immediately interesting to the farmer (whether valuable, or pernicious,) and each species authentically labelled with the established scientific name, together with all the known popular synonyms, he would find himself in possession of one of the most useful dictionaries, or expositors, to which he could resort in the prosecution of his instructive labors. An herbarium, such as I have alluded to, being strictly confined to plants in which the farmer is interested, would neither be bulky, nor difficult to obtain. A fair specimen of each species, and variety, gathered when in its most perfect state of development, and carefully prepared for preservation, by pressure and drying between sheets of paper, might be procured with but little trouble, I should think, in a single season. If you will undertake the work, or get some

active friend to make the collection for you—in the spirit which you have manifested, I will ensure your success. It is only to begin and the thing is accomplished. Mr. Curtis will, as he has promised, give any information, as to the mode of proceeding, which may be desired; and when the specimens are ready, send the package to him, and he will affix the *scientific name* to each species, so as to render it *authentic*. They will then serve as standards, for *comparison*, whenever unknown or doubtful plants may be exhibited; or in case the character of any specimen may be disputed.

I fear you will think I have taken a strange unwarrantable liberty, in thus addressing you: But I beg you to understand, that I have done so because I felt a conviction I was communing with a kindred spirit, on a favorite topic; and on this ground I hope my apology will be accepted. I am very respectfully, dear sir, your obedient servant,  
W. M. DARLINGTON.

P. S. My *Flora of Chester county*, contains descriptions of all our *cultivated useful plants*, with brief notices of the properties and uses of the others, as far as known, and their popular names &c. The work may possibly interest you somewhat, though mainly *technical* in character. I will have a copy left for you at my bookseller's, *Kimber and Sharpless, No. 50 North 4th street, Philadelphia*. Will you do me the favor to accept it, and get some friend to call for it, who may be coming to Philadelphia? It will be there, awaiting your orders, and I hope you will send for it the first opportunity.  
W. D.

[So far from deeming the addressing to us the foregoing letter "a strange and unwarrantable liberty," we were much gratified at receiving it, both in regard to its particular object, and also as placing its writer among the direct contributors to the *Farmers' Register*. We had in the earliest number of the work, as several times since, selected his valuable agricultural articles from other publications; and we trust this commencement of direct contribution from his pen will be followed by as many others as his inclination may suggest, and his leisure permit. The offered present of the '*Flora Cæstrica*' will be thankfully accepted, and its use and lights permitted to aid some friend and correspondent, who possesses something of the knowledge of botany, of which it is our misfortune (and great defect as an agricultural editor) to be altogether destitute.—ED. F. R.

#### CRUSHED CORN MEAL—FEEDING HORSES— PRESERVING BACON.

For the *Farmers' Register*.

Since my former article, in relation to crushed corn meal, was communicated to the *Register*, I have been informed, by the highly intelligent iron-master, therein alluded to, that he kept his

mule teams, of six each, fat last summer, though hard at work every day, on a daily allowance of one bushel of crushed corn meal, and the same quantity of bran, mixed thoroughly together and fed with cut straw—with a moderate quantity of clover hay in the rack. With corn at  $37\frac{1}{2}$  cents, and bran at 10 cents a bushel, this mode of feeding would reduce the cost of a six-mule team to *less than thirty cents a day*, or five cents a mule, exclusive of hay and the straw mixed with the meal. A single calculation will show every farmer how much he could gain every year, by adopting this economical mode of feeding his work horses; doubtless enough in a life-time to buy a respectable farm for his sons.

I was also informed by this gentleman, who is one of the best farmers and managers I ever knew, that he fattened twenty bullocks last fall on crushed corn meal, at much less cost than he could have fattened them in any other way. He is decidedly of opinion that he saves more money by crushing and grinding his corn, than by any other economical process practised on his extensive estates; and I know no one in whose sound practical judgment I have greater confidence.

As my sheet is not full, I would add a word on another subject. A respectable neighbor informs me that he has preserved his bacon for twenty years, without the loss of a single piece, by white-washing each joint, on the fleshy side and at the end of the hock early in the spring, before the fly deposits its eggs. He gives the pieces a thick coat of ordinary white-wash, with the common brush, then hangs them up in his smoke-house, where they remain until taken down for use. The white-wash does not impair the flavor of the meat, or injure it in any way, in the slightest degree.  
PLOUGHBOY.

Rockbridge, Va., March 17, 1841.

#### WEEDS OF AGRICULTURE.

From Low's Elements of Practical Agriculture.

The weeds of agriculture are those which grow amongst the cultivated plants, and which it is the province of the farmer to destroy. The prevailing plants of this class vary in every country, and in different parts of the same country.

Weeds may be divided into two general classes; those which propagate themselves solely by their seeds, and which, having once flowered, perish; and those which have perennial roots, and flower and bear seeds for successive years. The first are annual or biennial plants, according as they require one or two years to complete the period of their vegetation. The second are perennial plants, and grow again from the roots as well as propagate themselves from their seeds.

In the case of annual or biennial weeds, if the stem is destroyed at the time of flowering, or just before it, the individual is destroyed, and its further means to propagate the species are taken away; but in the case of perennial weeds, the destruction of the stem does not infer the destruction of the plant, because the plant has the power of propagation from the roots. From this distinction, it would seem more easy to destroy annual

than perennial weeds, yet this conclusion does not always hold; for some of the annual species have such numerous minute seeds, that it is often very difficult to extirpate them, and when they have got into ground, keep possession even more inveterately than those which have the power of springing again from their roots.

Of the perennial weeds greatly the most troublesome are those which have creeping roots; for these extend themselves below ground, and if any of the parts of the roots remain, these may give birth to new plants.

Either class of weeds may be frequently destroyed by the same means, namely, by assiduous tillage of the ground; but yet a natural division of them is into such as have annual and biennial roots, and such as have perennial roots.

### I. Annual and biennial weeds.

Of weeds which have annual or biennial roots, the following are the most prevalent in this country.

1. *Sinapis arvensis*—wild mustard.
2. *Raphanus raphanistrum*—wild radish.
3. *Papaver rhœas*—corn poppy.
4. *Centaurea cyanus*—corn blue-bottle.
5. *Chrysanthemum segetum*—corn marigold.
6. *Pyrethrum inodorum*—corn feverfew.
7. *Sonchus oleraceus*—sow-thistle.
8. *Cnicus lanceolatus*—spear plume-thistle.
9. *Arctium lappa*—burdock.
10. *Agrostemma githago*—corn cockle.
11. *Stellaria media*—common chickweed.
12. *Spergula arvensis*—corn spurrey.
13. *Galium aparine*—goose-grass.
14. *Urtica urens*—small nettle.
15. *Lamium purpureum*—red dead-nettle.
16. *Galeopsis tetrahit*—common hemp-nettle.
17. *Euphorbia helioscopia*—sun-spurge.
18. *Polygonum convolvulus*—climbing buck-wheat.
19. *Polygonum aviculare*—knot-grass.
20. *Ervum hirsutum*—hairy tare.
21. *Lolium temulentum*—bearded darnel.
22. *Avena fatua*—bearded wild oat.
23. *Bromus mollis*—soft broom-grass.

1. The wild mustard, the charlock of farmers, frequently springs up in vast abundance in fields of growing corn. It flowers in May or June, and as it ripens and sheds its seeds before harvest, it is difficult to extirpate it. Sometimes its flowers are cut off by a scythe or hook as they rise above the corn in spring; and sometimes they are pulled up from amongst the corn by the hand, which is an unsatisfactory and operose method. The row culture is, in an especial degree, beneficial in the case of this and similar plants, for the first crops of them can be cut down by the hoe in spring. But the period most suitable for destroying the wild mustard is during the summer-fallow and fallow-crops. Yet under any circumstances it is difficult to subdue it, its seeds lying for an indefinite period in the soil until brought by the plough within the influence of the air. Often it springs up without any known cause and covers entire fields. It abounds in fields of turnips, contending for mastery with the young plants. Other species of *sinapis* also spring

up in cultivated ground, but this is the most prevalent and hurtful.

2. The wild radish, or jointed charlock, like the wild mustard, has yellow flowers, and grows and sheds its seeds amongst corn. The two plants, from their similarity, are frequently confounded together, and pass under the common name of charlock.

3. The corn poppy is distinguished in summer by its gay red flowers. It sometimes rises in large quantities in corn-fields, especially in soils that are dry, sandy or gravelly. It receives the name of red poppy, corn-rose, red-weed, &c.

4. The corn blue-bottle is of a genus which contains several species known as weeds. That however which is peculiar to corn-fields is the corn blue-bottle. It grows amongst corn, but rarely in great quantity, and its presence merely indicates careless farming.

5. The corn marigold is of a genus that supplies our gardens and greenhouses with many beautiful flowers. From the color of its flowers it is in some places termed yellow-bottle, in other places gowlands, or yellow gowans. It grows amongst fields of corn, and may be pulled by the hand. It is not in this country a very generally diffused weed, being found only in particular parts. But in some sandy districts of Europe it prevails to so great a degree as to destroy the crops.

6. The corn feverfew or scentless May-weed, is generally classed by farmers under the name of mayweed, with two other plants of similar appearance, stinking chamomile and wild chamomile. The corn feverfew rises sometimes in cultivated land in considerable quantities.

The corn poppy, the corn blue-bottle, the corn marigold, and the different May-weeds may be said to form a class. They grow up with the crops of corn, and announce by their beautiful flowers the return of the warmer season. They are not of the formidable class of weeds, and yet assiduous tillage is required to eradicate them. They are frequently conveyed to the farm with the seeds of corn, and then careful winnowing is the best preventive.

7. The sow-thistle grows in fields of corn. It is of a family of plants whose light seeds are widely dispersed by the winds. But although a common, it is not a dangerous weed.

8. Spear plume-thistle is one of a genus of troublesome weeds, but which are mostly perennial, while the spear plume-thistle is biennial. It sometimes abounds in old pastures. It may in all cases be destroyed by cutting it over when in flower, and before its seeds are ripe.

9. The burdock is a familiar plant whose hooked scales fasten themselves pertinaciously to clothes and the fur of animals. It is a biennial plant, seldom injurious, and easy to be extirpated.

10. The corn cockle or corn campion, is of the pink tribe of plants. The flour of its seeds mixed with grain injures greatly the quality. The seeds are heavy, and on this account cannot be separated from corn in the operation of winnowing. It grows singly, chiefly amongst wheat; and being easily distinguished, it can be pulled up by the hand.

11. Common chickweed is of the same natural family, but of a different habit of growth. It grows not alone, but thickly in the parts of fields



which are enriched by the dung of animals. Under careless management it is often a troublesome weed; and in fields of turnips it will contend for mastery with the young plants.

12. Corn spurry, likewise of the pink tribe, sometimes grows thickly in corn-fields, and then it indicates bad condition of the soil, or careless farming.

13. Goose-grass, called also cleavers, catchweed, and goose-tongue, grows naturally in hedges, but is carried also to the cultivated fields where it propagates itself rapidly. Its seeds are furnished with hooked bristles, which attach themselves to the fur of animals, and in this manner are disseminated. In some parts of England it is a troublesome weed, but in other parts it is comparatively inoffensive.

14. The small nettle is an annual plant. It sometimes extends over cultivated fields, and generally indicates that the soil is enriched by putrescent substances.

15. The red dead-nettle, though termed a nettle, is of the mint tribe of plants. It is thus of the same family as the mint, the marjoram, the sage, and the thyme, plants all harmless and possessing cordial and stomachic properties. The red dead-nettle is sometimes frequent in fields, especially near hedges, and in sheltered places.

16. The common hemp-nettle, also of the mint tribe of plants, is common in corn-fields. Reapers are sometimes affected by severe inflammation in the hand by grasping it. It is covered by bristles, and these, on being pressed, emit a poisonous fluid.

17. Sun-Spurge is one of a family of plants which yield a peculiar milky juice. It is sometimes abundant in corn and turnip fields.

18. Climbing buckwheat is, in some places, termed bind-weed or bearbind. When in quantity it is apt to overpower the corn. It is frequently seen twining round turnips and other plants. Its seeds are said to injure wheat; but the seeds are in themselves nutritive, and if mixed with oats will not injure their quality.

19. Knot-grass is another of the buckwheat genus, of frequent occurrence; but it abounds more in waste places than in cultivated grounds.

20. Hairy tare is a leguminous plant which frequently occurs in cultivated fields, and then it is a hurtful weed.

Several of the annual grasses are of frequent occurrence in cultivated grounds.

21. The bearded darnel is common in some countries, but it is comparatively rare in this. It has been condemned as a poisonous plant for more than 2,000 years.\*

22. The bearded wild oat is often a very pernicious weed. Its seeds readily drop out when ripe; and as it ripens sooner than the cereal grasses and then sheds its seeds, it is difficult to extirpate it. It is frequently conveyed with the seed-corn to the ground, and thus may be propagated on the best managed farms.

23. Several of the broom-grasses are found as weeds in our corn-fields. The most frequent of these is the soft broom-grass, in some places

termed goose-grass. The seeds of this plant are like those of rye-grass, and are propagated along with that grass. But the plant itself is easily distinguished from the rye-grass; and when the latter is to be thrashed for seeds, the broom-grass may be picked out by the hand. The list of this class of weeds might be greatly extended, but this does not seem to be here necessary. They are all of them best extirpated by diligent tillage. The better cultivated a country becomes, the less prevalent and hurtful will be this class of plants.

## II. Perennial Weeds.

1. *Ranunculus acris*—upright meadow crow-foot, and other ranunculi.
2. *Senecio Jacobea*—common ragwort.
3. *Tussilago Farfara*—coltsfoot.
4. *Bellis perennis*—daisy.
5. *Chrysanthemum Leucanthemum*—great white ox-eye.
6. *Cnicus arvensis*—corn or way-thistle.
7. *Centaurea nigra*—black napweed.
8. *Sonchus arvensis*—corn sow-thistle.
9. *Lamium album*—white dead-nettle.
10. *Rumex obtusifolius*—broad-leaved dock.
11. *Polygonum amphibium*—amphibious persicaria.
12. *Urtica dioica*—great nettle.
13. *Agrostis alba*—marsh bent-grass.
14. *Arthenatherum avenaceum*—common oat-like grass.
15. *Holcus mollis*—creeping soft grass.
16. *Triticum repens*—common wheat grass.
17. *Juncus effusus*—soft rush and other junci.
18. *Ericæ*—heaths and other shrubby plants.
19. *Filices*—ferns.
20. *Musci*—mosses.

1. The upright meadow crowfoot grows in a great variety of soils and situations. Like most of the dangerous family to which it belongs, it inflames and blisters the skin. It is too acrid to be eaten by cattle, unless largely mixed with other plants; but so mixed, it is consumed in small quantity, and from its abounding in our meadows, is perhaps designed to serve as a condiment. In common with some others of the genus, it is termed butter-cup or butter-flower, from a popular notion that it gives the yellow color to butter. It however injures the butter, whose yellow color is due to the richness of the pastures and not to these acrimonious plants.

The creeping crowfoot, *Ranunculus repens*, and bulbous crowfoot, *Ranunculus bulbosus*, resemble the last in their properties. They adorn our meadows with their bright yellow flowers, and are comprehended under the common name of butter-flower, butter cup, and sometimes of king's-cup, golden-flowers, &c. The breaking up of grass land for a course of tillage is the only means of eradicating this class of weeds.

2. Common ragwort is a large, well known weed in pasture fields. It receives many names, as ragwort, ragweed, canker weed, &c. It has a perennial root, and grows to the height of two or three feet. It is best kept down by pasturing with sheep, which eat it in its early stages. By being pulled up by the hand, which can be easily done when the ground is soft from rain, it can be extirpated in grass fields without taking up the land for a course of tillage.

\* This is the "spelt" of lower Virginia, which has not been very long introduced, and which yet is believed by most persons to be degenerated wheat, as they also believe of "cheat."—Ed. F. R.

3. Coltsfoot grows chiefly in moist clays, and especially in marly soils. Its broad leaves overspreading the surface, it is very hurtful where it prevails. Tillage and draining, and improving the texture and fertility of the soil, are the means to be adopted for rooting it out.

4. The daisy, though every where loved and admired as the harbinger of summer, and the ornament of our fields, is, in the judgment of the farmer, a weed. Where it prevails too greatly, the land requires to be renovated by a course of good tillage, and by lime.

5. The great white ox-eyes, sometimes also called the great white daisy or moon-flower, often abounds in pastures, and is only to be extirpated by tillage.

6. Thistles form a class of weeds very formidable to the agriculturist, from the ease with which they are disseminated by means of their downy seeds, and the difficulty of eradicating them. Some of them have deep vivacious roots, and all of them, on account of their vigorous growth and their strong spreading leaves, are injurious amongst the cultivated plants.

The most common of the thistle kind is the corn or way-thistle. This plant has strong, creeping, and vivacious roots, the habit of which is to strike down to a great depth in the ground. If any parts of these roots are left in the soil, they will again give birth to numerous plants.

The means of extirpating the way-thistle from land is by a continued tillage and deep ploughing. Even an efficient year's summer fallow will not always effect this; when land has been thoroughly overrun by the plants, they will spring up in future years, and require successive years' tillage thoroughly to exterminate them. The lands of various parts of this country used to be greatly more covered with thistles than they now are. In some parts of Scotland they were once so abundant that they used to be cut regularly for five or six weeks in summer to supply food for the wretched cattle of the day. In well cultivated districts they have been got under, though, so great is their tenacity of life and power of propagating, that they demand constant attention on the best cultivated farms, and under negligent management never fail to take possession of the soil. New lands brought into cultivation are often entirely covered with this species, and a course of tillage is necessary before it can be subdued. In the ordinary management of a farm, thistles will sometimes spring up in great abundance with the first crop of oats after grass. In this case, they must be weeded early in summer, by being cut over near the surface, which is conveniently done by the weed-hook. The sole effect of this, however, is to retard the growth of the plant and prevent it from running to seed, or contending for mastery with the growing corn.

Thistles sometimes spring up in great plenty in old pasture fields. In this case, they should be cut close to the ground at least once a year, so as to prevent their smothering the pasture plants and running to seed. But it is only when the land is broken up for tillage that effectual means can be used for destroying them. Instruments, indeed, have been devised for pulling up thistles from the ground, but the roots of the plant are too easily broken, and the smallest portion left in the soil will spring again.

The thistle not only grows from its creeping, vivacious roots, but is widely disseminated by its light downy seeds. Thistles therefore ought to be cut down before being permitted to perfect their seeds; and they should never be suffered to grow in waste places and hedges, whence their light seeds may be carried to poison the neighboring fields. Further, when they have been cut down at an advanced stage, they should not be left on the ground, for like many composites they will mature their seeds though separated from the ground.

7. Black knappweed is one of a class of thistle-like plants. It is termed horse-knot, and receives many other local names. It is a hurtful weed in pastures where it prevails, increasing much by the roots, and being extirpated with difficulty.

8. The corn sow-thistle is a frequent plant in corn-fields, distinguished by its tall stems and large yellow flowers; but it is not usually a very hurtful weed.

9. The white dead-nettle is occasionally common in corn-fields. Having a strong, creeping perennial root, it should be carefully extirpated. This is one of the mint tribe of plants before referred to.

10. The dock genus comprehends a variety of species known to the farmer as weeds. These plants produce a large quantity of seeds, which they readily mature. The seeds are heavy, and though diffused by the smaller birds, to which they serve as food, they are not so readily disseminated by the winds as those of the thistle kind. They, however, vegetate freely when they fall on the ground, and produce plants which, when once allowed to extend their roots in the soil, it becomes difficult to exterminate. The roots are vivacious, and if cut into pieces the separate parts will send forth shoots. It is more easy however to raise up the roots of docks than of thistles by means of instruments, which receive the lower part of the stem in a cleft, and being used as a lever, wrench the plant from the ground. But the only effectual method of extirpating docks, as of most other weeds, is by summer fallow or cleaning crops. The seeds of docks are often conveyed to the farm mixed with grass seeds. When this takes place, the docks will frequently establish themselves with the grasses and grow vigorously the second year. They should be then pulled up by the hand, so as to prevent their running to seed and further overspreading the ground. The species of docks are very numerous. The most common is the broad-leaved dock, which is found in every country of Europe. In this country it generally indicates a good soil.

11. Amphibious persicaria is of the same natural family as the docks. On damp deep soil it is sometimes very abundant, overspreading the surface when the land has been left in grass. The prevalence of this plant generally indicates the need of draining.

12. The great nettle is frequent in waste places, under walls and in hedge banks. This species grows over all Europe, and is found from Barbary to Siberia and Japan. In this country it generally indicates a good soil. When it takes root in pastures, it is very difficult to extirpate it. It forms patches on which other plants will not

grow. It may sometimes be destroyed by cutting the plant so as to enfeeble it, and sometimes it is dug up by the roots. But when it prevails in pasture grounds to any extent, the proper remedy is a course of tillage.

Several of the grasses are known as weeds, which, from their creeping or vivacious roots, it is difficult to extirpate.

13. The marsh bent-grass extends itself not only by its creeping roots below the surface, but by its stolons or suckers above ground. Others of the genus extend themselves in the same manner in wet situations. They receive the names of black couch, black twitch, or black wrack.

14. The common oat-like grass has bulbous roots, whence it is called by farmers knot-grass. It is a very troublesome weed in many soils. The little bulbs when detached from the root, grow again, so that very careful tillage is required to extirpate the plant when it takes possession of a piece of ground.

15. Creeping soft-grass is another plant which when it takes possession of ground is not easily rooted out. It has a strong creeping root; but the species is comparatively rare.\*

16. Common wheat-grass or couch-grass, is called likewise quick or wrack, and receives many other names. It is the most abundant of the perennial weeds of corn lands. Its roots are creeping, and every part of them left in the ground will grow; and hence the difficulty of extirpating the plant. The most effectual means of doing so, is by frequent ploughing and harrowing, and collecting the roots by the hand. This constitutes, as was formerly seen, an important part of the process of the summer fallow and preparatory cleaning crops. There is no weed which requires so constant a vigilance on the part of the husbandman as the creeping wheat-grass; but it is well that in contending with this perpetual enemy he is compelled to give a more assiduous tillage to his land than he might otherwise be induced to do.

These different grasses are frequently all confounded under the name of couch, quick, and wrack,—names sufficiently indicating their characters.

17. The soft rush, with other junci, are all to be regarded as weeds when they prevail amongst the better plants. They indicate wetness, and are only to be effectually removed by draining.

18. The heaths are a widely extended family, covering a large part of the north of Europe. Where they intrude amongst the cultivated plants they are to be regarded as weeds.

Many other shrubby plants are found in unimproved land, and one of the first objects of cultivation is to extirpate them. Fallowing and liming are the usual means by which this class of plants is destroyed.

The whin is one of the class of shrubby weeds. It requires continued culture thoroughly to extirpate it; for, after being apparently subdued, it will spring up again in great numbers, and for successive years. When the land is in grass, the young shoots may be sometimes pulled up by the hand, after the land has been saturated by rain. But when whins have thoroughly established themselves in the soil, and extended their roots, they

must frequently be hoed up before the plough can act. The land being then ploughed with a good furrow, the remaining roots are torn up, and the plants at length destroyed. On elevated sheep farms, whins should be encouraged rather than destroyed, for in such situations they afford shelter and food.

Broom is a shrubby plant, for the most part more easily extirpated than the whin, though in certain situations it grows with great pertinacity. It affects the lighter soils.

Brambles and other shrubs of the rose family are often the possessors of unimproved soils. Certain species of the bramble are very tenacious of their situation. These plants are destroyed by the same means as the whin; and the like remark applies to all the large shrubs.

19. Another class of weeds is the acotyledonous, or flowerless plants, at the head of which stands the fern. Of the fern or fern-like plants, there are many species in this country. They grow chiefly in mountainous tracts of natural pasture.

20. The last in order of the weeds are the mosses. These plants are altogether innutritious: They often intrude extensively on pasture ground, and supplant the herbage plants. The best remedy in all cases is a course of tillage, and the application of lime.

The list of perennial weeds might be greatly extended. They differ in their characters and habits of growth, but they are all of them eradicated by careful tillage, chiefly during the period of the summer fallow and cleaning crops.

#### ON BURNING COTTON STALKS, TO DESTROY INSECTS.

From the Farmers' Gazette.

A neighbor of mine was induced by an article headed "Burn your cotton stalks," which has been published in several papers, to make an examination of his cotton stalks, which has resulted in his conviction that the suggestion of "A young Planter," is worthy the consideration of his brethren of the plough. This gentleman states to me that a number of his cotton stalks perished last summer, in different stages of their progress to maturity—some of them with a partial crop of bolls upon them. In making the inspection alluded to, he discovered that some of the limbs were perforated underneath, near their junction with the main stem. In some of these cavities, he found a small straw colored bug of an oblong form, between the size of a grain of wheat and a small pea, while from others the little intruder had disappeared. I here inquired of him if it was not probable that these intruders had commenced their exploring expeditions after the stalks were killed by frost, to which he replied, that he noticed several apertures which were partially closed by the after growth of the plants. From these facts, he is persuaded that much evil for the present season might have been averted by a timely destruction of his cotton stalks.

If any light can be shed upon this subject it is desirable that it be reflected through your columns. The subjects of rot and rust, after all the speculations that have appeared in reference to their origin, still remain among the "terra incognita."

\* Called wire-grass in lower Virginia.—Ed. F. R.

of agricultural ken. The best method of averting them, if possible, is a subject of great interest to the planter.

## CORN STALKS.

## FLORIDA.

The National Intelligencer, of a recent date, publishes a correspondence between Judge Brackenridge, of the late House of Representatives, and Col. Wyatt, of Florida, in which the latter, in answer to various inquiries, gives some interesting particulars relative to the natural advantages of the Florida country.

That portion of the territory known as the Everglades extends from the head of St. John's river to within ten or fifteen miles of Cape Florida, thus running almost the whole length of the territory from north to south. This extensive tract is believed to be twenty or thirty feet above the level of tide-water, and is susceptible of being rendered perfectly dry by means of deepening and widening the various outlets or rivers that flow through it from the lakes to the sea. The lakes near the centre of the Everglades are deep and navigable, and connect with one another throughout the whole distance. Col. Wyatt states that he ascended two of them and found them about the same in point of elevation. The current on approaching the lakes was very rapid; this was at a dry time when the glades were not overflowed by waters from the lakes. "These facts," says he, "convinced me that if the heads of these outlets or rivers were opened, by deepening and widening them, which could be done at comparatively small expense, these lakes could be kept at all times within their natural bounds; which would render the glades perfectly dry, opening to cultivation an extensive plain of table lands of about eight thousand square miles, (after deducting a fourth for the lakes) sufficiently elevated above both lakes and tides to be certainly free from inundations, and as healthy as the Keys."

The tropical region of the peninsula reaches from Cape Florida about 200 miles north; the soil of the Everglades is said to be very rich, with a deep black, alluvial formation; it is covered with water only in the wet season.

Concerning the productions of this territory, in addition to the ordinary tropical fruits which may be cultivated in abundance, Col. Wyatt says:—

The nopal, or prickly pear, on which the cochineal insect is found, is a native of Cape Florida, so is the cotton plant or tree; both grow wild in the forest, and the cotton tree is the same as cultivated on our plantations, differing only in the smallness of the leaf and pod, and the length and fineness of the fibres. The seeds are tured, like our upland cotton, and need not be planted more than once in some three or four years. The Manilla hemp is also a native growth of this region. In fact, it is to be found in all parts of the territory, and can, no doubt, be cultivated with great advantage as far north as the 31st degree of north latitude on the poorest sandy land. The Indians have ropes, mats, &c. and, before the war, supplied the first settlers with a variety of articles formed out of it, such as halters, lines, bedcords, &c. at a very cheap rate. It was commonly known as the grass-ropes. Sugar, of

course, can be cultivated with the same success as in the island of Cuba.

I doubt whether coffee can be cultivated with advantage here, as it will not thrive well on soil based upon rock approaching near the surface, as is the case in this region. The coffee tree has a long tap root, which penetrates the earth to a considerable depth, and cannot be sustained, as almost all other trees and plants are, by lateral roots. The vanilla plant, which is used to a very great extent in imparting the fine flavor which they have to Spanish cigars, snuff, &c. is found in a wild state in all parts of South Florida, in great abundance.

The arrow, or coonti root, also abounds on Cape Florida; on which the Indians, and even the white settlers in that region, prior to the war, subsisted almost exclusively. It is an excellent substitute for bread, and the process of converting it into the most beautiful and snow-white flour is very simple, requiring nothing more than a common tin grater, and a bucket or tub to wash it in, for the purpose of separating the flour.

As for the production of tobacco of a superior quality in this region of Florida, as well as in portions further north, there can be no question. Indeed, the experiment has been already fully made, and has resulted in the raising of an article not inferior to that in the West Indies. Its flavor is thought by many to be superior to that of the Cuba.

The facilities for internal communication in Florida are very great, and it is believed that at small expense an inland steam navigation can be opened directly through the centre of the Peninsula. If the capabilities of this tropical region, which are described as so great, can be brought into use, the importance of the Florida country to the union can hardly be appreciated too highly. We shall stand, as a nation, still more firmly on the independent basis of domestic resources when it is found that the productions of the tropics, now brought to us from abroad, may be added to the list of native commodities in quantities sufficient to supply our wants.—*American*.

## WIRE-GRASS DESTROYED BY HOGS.

We have many native perennial grasses amongst us which I am convinced are worthy of cultivation, and shall experiment upon some of them this year; and should like to hear of many others entering upon the research. And now, before I fill up my sheet, let me give some facts with observations upon the despised *Wire* or *Joint Grass*, (so called in my section.) That the prejudices of the reader may not cause him to reject the merits of this grass, I will assure him how it can be destroyed where not wanted to grow, without any loss of labor.

Like many other grasses, it is so multinamed, it is not easily known by name. Its botanical name even seems doubtful. While a celebrated botanist, Dr. Darlington of Pennsylvania, calls it *poa compressa*, the Editor of the Farmers' Register contends that its true name is *triticum repens*. It is known in England by the name of the *couch-grass*, in Pennsylvania *blue-grass*, Virginia *wire-grass*, and some parts of South

Carolina, wire-grass, and others joint-grass. It is however easily known by description. It is a perennial, growing from the root or joint as well as seed, the stem or vine however, above ground, is killed by the freezes every winter. It branches out from the central root two or three-feet in the summer, and hugs the earth with roots from every joint, which are not over 2 or 3 inches apart. And now for the facts, as relates to its value and plan of destruction. It had so taken possession of some bottom land which I cultivated, that I concluded it was vain to attempt to make cotton longer upon it. Knowing that hogs were fond of it, I concluded to fasten the hogs up in the field without any other food, to see if they could live upon it, and in some degree destroy it, or at least thin it, so as to render the land fit for cultivation. The hogs were put in, in Feb. 1840, when very poor. Result, in 4 weeks: they were in order, fit for pork, and had rooted the field where the grass grew, like a potato patch where hogs had run. In 1839, part of this field was planted in corn and the other part in cotton. That which was in corn I manured in the hill, planted early, and planted thick with peas the first ploughing. The corn was rank and the peas nearly covered the ground, so as, with the corn, to exclude the sun pretty well from the grass. I observed where the grass was shaded, that its vines, instead of hugging the earth, run up perpendicularly, and most of it so perished, that it either died or brought no seed. Since then, I have noticed where corn, peas and pumpkins have been planted three years in succession, where this grass grew, it is pretty well extirpated. I have further observed that it perishes wherever the ground is completely shaded by trees or weeds. This year I have 50 or 60 hogs fastened up in the same field, since my peas were eaten off. They have not been fed with one bushel of grain, or other food but what they gather in the field, now about eight weeks. Although the grass was much thinned out last year, so as not to injure the corn or cotton crop upon it, my hogs look as fat as I ever saw hogs upon peas or potatoes. If any doubt it, come and see. Be it remembered that it is the stalk or vine which is covered by the plough, and not the top or fibrous roots, that is eaten by hogs! the stalk being covered, it becomes pulpy and saccharine; if exposed to frosts, it dies.

J. D.

#### AN ACT TO PROMOTE AGRICULTURE IN NEW YORK.

From the Journal of Commerce.

This act became a law on the 5th inst. It appropriates \$8000 per annum, for the term of five years, for the promotion of agriculture and household manufactures in this state. The sum of \$650, for New York county, is given to the American Institute.

When the New York State Agricultural Society, or any county agricultural society which is now, or may hereafter be formed, or the American Institute, shall by voluntary subscription raise any sum of money, then the comptroller, on an affidavit of the facts, shall draw his warrant on the treasurer for an equal sum, which is not, however, to exceed the amount apportioned to the county.

It is the duty of the officers of the state and county societies to regulate and award premiums on such articles as are best calculated to promote the agricultural and household manufacturing interests of the state, giving the reward for the most economical or profitable mode of competition. An accurate written description of the whole process in raising the crop, or feeding the animal, as may be, is to be given by the person claiming the reward.

#### EXPERIMENT ON THE PROPER DISTANCES FOR COTTON.

From the Southern Agriculturist.

*Mr. Editor:*—When I had the pleasure of seeing you at my house last spring, you requested me to make an experiment on thinning cotton to different distances, with the view of ascertaining, if possible, what is the best distance to give between the hills. I made the experiment accordingly, and hand you an account of it.

The rows were three feet apart, and five hundred and eighty-five yards long.

	Inches	Produced	
1st row thinned to	6	100	lbs. seed cotton.
2d " " "	to 8	90	" " "
3d " " "	to 10	106	" " "
4th " " "	to 12	82	" " "
5th " " "	to 14	92	" " "
6th " " "	to 16	100	" " "
7th " " "	to 18	107	" " "
8th " " "	to 20	105	" " "
9th " " "	to 22	118	" " "
10th " " "	to 24	91	" " "
11th " " "	to 7	122	" " "

The difference in the product of the different rows, I suspect, is owing to the manure not having been equally distributed, for it is difficult to get precisely the same quantity put under each bed. If any thing is proven by this experiment, it is, that between six inches and twenty-four, there is but little difference in the product; but the same experiment must be repeated for several years before the question, whether one distance is better than another, can be settled. Last year was very wet, and the weeds grew unusually large; this may account for the rows having the greatest distance producing as much as the others; but in a dry year the result might be very different. To make a satisfactory experiment, I would suggest that it be made upon cotton to which no manure is applied, on account of the difficulty of spreading the manure equally on the different rows.

J. A. GILLESPIE.

*Mariboro', So. Ca.*

P. S.—The land on which this experiment was made is upland, sometimes called oak and hickory land.

#### ROHAN POTATOES.

To the Editor of the Farmers' Register.

As my experience in cultivating the Rohan potato does not agree exactly with that of your correspondent, as stated in the last number of the

Register, p. 262, I have concluded to furnish you a few remarks relating to my experience, hoping that many others, who have cultivated the same potato, will follow the example. Such seems to me the only mode by which we can in any short period ascertain the real value of this species of potato for the table. If I remember correctly, the accounts heretofore published represent the Rohan as an inferior potato for the table, and less farinaceous than some other kinds. Such has been my experience in a trial of them for three years. Let it not be understood that I have used them three years for the table. Three successive years I have cultivated them, and have each year tried them, by roasting and boiling. I have never found them mealy, to use a common phrase, but more like the common yellow potato, so generally brought here from the north in the spring, and, strange to say, generally planted. This species, the yellow, is barely edible when young, but when ripe is only fit for stock. The flavor of the Rohan is certainly superior to the yellow potato; but the real Mercer, the Forty-fold, the white kind from Eastport, Maine, and the potatoes procured yearly by Mr. N. of our town from the Quakers on North River, are, to my taste, far preferable to the Rohan for the table. They are much more farinaceous than the Rohans raised on my farm, on a soil tolerably stiff, and called commonly "mulatto soil." But it would seem, from the description given in your last number, by the correspondent referred to, that his soil is peculiarly adapted to the cultivation of the Rohans. Perhaps the experience of many others may agree with his, and, if so, it will doubtless be of great importance to the state. The most of the potatoes brought here from the north, for a year or two past, if not longer, except those specially ordered, have been of miserable kinds, fit only for stock. Those who have relied on the miscellaneous importations here from the north, to supply their tables the last winter, have fared badly indeed.

It is a matter about which I presume there can be no doubt, that some species of potatoes are much better for the table during some seasons of the year than at other seasons. I have found the Forty-fold potatoes earlier and superior to all other kinds for summer use. They are very white, and are farinaceous, even when quite small. They are not so good in winter. The real Mercer potato is excellent in fall and winter. I speak from my own experience, and from observations made within thirty miles of town, in saying that the Mercer potato can be raised here in perfection. I mean by this term, as good as we ever get from any part of the country. There are two or three varieties of what are called Mercer potatoes. The kind perfectly white is, I think, the preferable kind. They are raised in great perfection on the Eppington plantation in Chesterfield, and the seed potatoes have not been changed, as the owner says, for ten years. In September last, the Mercer potatoes raised on that plantation were equal to any potatoes of American or European growth, that I have seen for ten years. The above circumstances are mentioned to show what can be done here in relation to this important crop, and to stimulate, if possible, our farmers near town to do, what can easily be done, and what it would seem their interest to do—to raise potatoes

of a superior quality, sufficient to supply the towns in the state, as well as their own families.

The Rohan is certainly a very productive potato, and is equalled by none other known to us, unless it be the Forty-fold. Judging from appearances while digging, without weighing or measuring, I have thought the Forty-fold equally productive with the Rohan. But it is probable appearances deceived me. I rejoice that your correspondent has called the attention of the farming interest to the importance of the potato crop. Surely the buyers will encourage the home producers, when they know, as they must know, that the importations here from the north are generally of the very worst kinds; and when those who have had experience know that the potatoes imported here from Europe, the present and a few winters past, have not been superior, if equal to, the Mercers raised in the neighborhood. S.

Petersburg, May 10, 1841.

#### "THE BARREN SANDS OF JERSEY."

From the Farmers' Cabinet.

Sir,—I have been much interested with Mr. Gowen's communication relative to the culture of his farm of 40 acres, and its products; such an instance of devoted and untiring industry is deserving the highest commendations. To those who are acquainted with the nature of the soil which he cultivates, his success must be surprising; for who could contemplate the possibility of raising such magnificent crops of roots—beets, carrots and parsnips—on a soil which, only five years ago, was impenetrable to an iron bar, at a depth of three or four inches from the surface? But so it is; and truly has it been said, "To do much, we must have much to do"—witness also the agriculture of the eastern states, where the most perfect systems have been adopted, amidst the greatest disadvantages of soil and climate, and the triumph of *mind over matter* has received a most decided illustration. I say, I have been highly interested with Mr. Gowen's statements, and rejoice in the instance which it furnishes of the truth of your motto—"The productions of the earth will always be in proportion to the culture bestowed upon it."

But there is a portion of our country, lying at present under the ban of sterility, which would not, in such hands, be found a whit behind the most favored in point of productiveness; at the same time, it enjoys a facility for improvements which no other country, perhaps, possesses—I mean New Jersey, that country which is every where spoken against, and whose *barren sands* have passed into a proverb and a by-word. During a day which I lately spent there, in company with the *Cooper family*, I had come to the conviction, that there is no part of the United States which offers a fairer field to the view of the agriculturist than New Jersey; its perfectly inexhaustible beds of marl, crossing, as they do, so great a portion of the state, offering such facilities for improvement as are quite incalculable, and its mild and dry climate and proximity to the best markets, rendering it the most desirable of all situations for the agriculturist and horticulturist, particularly for the cultivation of flowers, the soil

having been ascertained to be peculiarly adapted for their perfect blooming—the dahlias especially.

Various have been the estimates of the importance of marl in the improvement of the Jersey soil, but they have all fallen far below the actual results. In my late visit I became acquainted with some instances, showing the most astonishing products that have been reaped from the use of it and improved tillage, and, with your permission, I will mention one or two, which are, however, by no means solitary cases.

Mr. John Gill cultivates a farm of 30 acres in Haddonfield: a portion of the land is situated on a hill-side, and is, therefore, not so highly improved, but upon these 30 acres he kept the last year such a number of cattle, and grew such quantities of produce, as were quite astonishing to every one. Would he give a statement for the pages of the Cabinet?

Capt. James Cooper said, "In the year 1793 I travelled eight miles before I could find a farmer who had it in his power to supply me with a single ton of hay; on going over the same road at this time, I could purchase more than two thousand tons; many of the farmers cutting upwards of a hundred loads yearly. My friend, S. R., whose farm, a few years ago, yielded nothing but blackberries, and was one uncultivated waste, produces the finest crops of wheat, and other grain and corn, and yielded more than 100 loads of hay the last year, at a cut of two tons and a half per acre, and all this is owing to the marl!"

We visited Todd's pit, which is by many supposed to contain the finest marl in New Jersey; the supply appears almost inexhaustible, occurring in an unbroken bed of the purest quality, from 8 to 10 feet thick. The owner, Mr. Alexander Cooper, disposes of it by the rod square to persons who dig it themselves; and at this price he is realizing about 1500 dollars per acre for the marl, the land afterwards being more valuable than before. This gentleman feeds his stock with corn and cob-meal, and no where have I seen finer animals, or in better condition.

YOUR SUBSCRIBER.

#### REELING SILK IN TENNESSEE.

From the Silk Journal.

[If the following letters, from the Rev. Mr. Ross, do not convince every reader of the practicability of the silk culture in this country, we know not what will. Those who doubt as to the reeling process may find a good lesson here.—*Ed. S. J.*]

*Kingsport, (East Ten.) Feb. 22, 1841.*

*Gideon B. Smith, esq. :—Dear sir,*—I never felt so sanguine of the silk culture as at this moment. There is nothing now in the way of its immediate advancement in East Tennessee, unless it may be that slowness which seems inherent in the motion of a farming people to change their habits. I say there is nothing now in the way—because, since I recommenced reeling on the first day of this month, my success is such, that I intend to advertise to buy from 1 to 2,000 bushels of cocoons.

The great bugbear has been the reeling. That question, as to *quality*, I considered settled by my experiments last summer, although at a costly

trial. Since I have recommenced reeling, I deem the question of *quantity* disposed of for ever. Presuming I should not be able to obtain cocoons for more than two reels, until the summer, I began with that number on the first day of February. My cocoons were very indifferent, with few exceptions, some not yielding more than 8 oz. to the bushel—none exceeding 14 oz. Part of the time the weather has been very severe, filling my room with condensed steam; nevertheless, I reeled, and two hours after dark. Thus showing, what was not believed, that reeling can be done after night. Under these circumstances my average has been between 9 and 10 oz. for each reel per day. This reeling is better than the best average I saw on the books of the Model Filature in Philadelphia last summer. The best average I saw there, in three weeks' work, was 10½ oz., in long summer days too, and having some, if not many, first rate cocoons—none of which I have.

And I saw no cocoons there so bad as many of mine. I think I will show 1 lb. per day to each reel, even with such cocoons as I have, before the 1st of March. I have reached 14½ oz. Now, my dear sir, do you not say I have some reason to be pleased. Many thanks to you for your encouragement to perseverance. The cost of my reeling is 2 shillings per day to each spinner, who finds herself. The flossing and turning the reel may be, *together*, 1 shilling more, if hired, or *nothing*, if little servants are employed. Before the 1st of March, I will show, that without counting interest on fixtures, &c., which will be a thing of nothing, I can exhibit beautifully reeled silk, which cost me 2 shillings per pound for reeling.

In a short time I think I shall have a very convenient filature, and silk reels enough, if I am sure of cocoons, to turn off sufficient silk to redeem the bold promise I made you last spring. I am making improvements in the saving of time, &c. every day. The double strainer to each pan I find works well.

FREDERICK A. ROSS.

[We must apologize to our friend, Mr. Ross, for the publication of both the preceding and following letter. They were not intended for publication, but they will do more public good than private harm.]

*Rotherwood, April 6, 1841.*

*Gideon B. Smith, esq. :—Dear sir,*—Your esteemed favor, of the 21st March, is to hand. Mr. Lynn, I presume, called on you, returning from Philadelphia. We think exactly alike on the subject of our national independence. And I have always, before there was any personal interest, been a tariff man; my silk enthusiasm has hardly abated at any time in six years. It is now higher than ever. I delivered a lecture the other day twenty miles from home in a court-house, and exhibited the model of a feeding and spinning frame, which I carried in my saddle-bags. I enclose you an advertisement which I am spreading through this county, and you will see from it that the business is no child's play with me. It is no longer experiment. I want nothing but the certainty of sufficient cocoons to secure the fact of immediately converting multicaulis leaves into gold. The victory is won. The people have nothing to do but to secure it. Cocoons can be made in this country for \$1.25, and, when labor is not hired, thousands will say, as a man said to my inquiry, 'what it cost to make

the five bushels he sold me.' 'Cost?' said he. 'Yes,' said I, 'what did the production of these cocoons cost you?' 'O!' said he, with surprise at my question, 'they cost *nothing*, sir, my little brothers and sisters made them, and their labor would have been nothing otherwise.' If \$20 had fallen from the clouds into that man's hand, he would not have had a clearer gain to his income without additional expense. Thousands will answer in this spirit, ere long, I believe.

My two reels are steadily at work. The silk reeled since 1st February amounts to about 70 lbs. Some of it is as good as they can reel in Piedmont, to save their lives, (as the boys say,) and the worst, many times better than any I have seen from Smyrna, or Bombay. Up to last Saturday, two girls in 52 days, all sorts of weather and cocoons, had reeled 62 lbs. of silk, without their being pushed at all, and idling some of course. They are singing half their time—I hear them now—and are delighted with their work. The profit I am making at present, is greater than I expected it to be. I could make more money at reeling silk, than any cotton plantation, or sugar, or gold mine in the United States. The girls in 52 days have reeled 62 lbs. of silk. The cocoons cost me \$186 00

The 2 girls wages, at 2 shillings each per day,	36 33½
Two reels, at 1 shilling for the two per day, (two children who turn the aspel,)	8 66½
Flossing cocoons, at 12½ cts. to the 1 lb. of silk,	7 75
	238 75
Price of 62 lbs. of silk, at \$5.50,	341 00
Profit,	102 25

From which must be deducted interest on fixtures, expense of coal, water, &c. After all of which is taken off, some of which would be only nominal, there is left a greater profit than I could expect or desire on a large business. In my advertisement, you perceive I offer, conditionally, 20 per cent. more than the price now given, which, with the deduction on the cotton yarn (to the farmers as money) from the retail price, will overgo \$4, on a bushel, making a pound of silk. It may be less on the inferior cocoons per ounce. I shall probably pay the equivalent to \$4, per 16 oz., without regard to my condition, since I have read your letter.

I am fitting up my cocoonery to feed with the branches, on the principle of Mr. Morris, of Burlington, modified. I dispense with his spinning frame as he has it horizontal above each feeding frame, and have it perpendicular between the two shelves, which form one row. I have no apron or shelf to catch the litter, that may riddle through to the ground.

We talked about this, and you thought there was no need of any thing to catch the litter. The whole affair is very cheap, and I intend to give it a fair trial; my first crop will be 500,000. I kill the chrysalis (which I forgot to tell you) in a house, such as is used for drying fruit. It costs but a trifle, and in one night the work is done, and well done. I want nothing else, neither for speed, cheapness, or perfect work.

I have scribbled this in a great hurry. But being on my bobby, I have kept him going. O! the best reeler in Philadelphia, wrote to me last mail she would come to Tennessee, if I said so. I will say nay, I will not insult my Hawkins county girls by an instructress, who knows no more than they do, after they have learned themselves, with my instruction, second-hand from you. Mr. M. of B. says he stopped for the cold weather. I reeled when the thermometer was nearly at zero; and two hours after night besides, every night until 1st March. But I must dismount.

FREDERICK A. ROSS.

P. S. I forgot to say, I reeled my pound to the reel in the day as I promised you, and I wish I could send you one of the hanks. The cocoons were fine, and the silk is beautiful, like threads of silver, and as even and smooth as glass. That best day's work as to quantity, is not surpassed by any other in quality. And that day's work can be done any time with such cocoons, and more than that, although the average is nothing like it in quantity. The cocoons are indifferent.

F. A. R.

[We must remind the reader that the girls who reeled the silk for Mr. Ross, had never seen a cocoon or a reel, till last fall; that they learned to reel under Mr. Ross' direction, from instructions given in the Silk Journal; and to this day have never seen a foreign reeler or a thread of foreign reeled silk.—ED. S. J.]

ADMISSIONS IN FAVOR OF THE NEW FOUR-FIELD SYSTEM. TEMPORARY WINTER FARM-PENS. RYE A SUBSTITUTE FOR CLOVER IN OHIO.

For the Farmers' Register.

It is much to be regretted that the desire to appear consistent so often prevents even ingenious persons from retracting wrong opinions. In making the following admissions in favor of the new four-field system, which gives three grain crops in four years, I shall endeavor, as far as I can, to divest myself of all such feeling; having been, as you know, a warm opposer of this system, in some of the early numbers of the Farmers' Register, and having found on trial that many of the objections there urged against it, by myself and others, are entitled to much less weight than I then supposed. At that time it did appear to me that the draught on the land, in producing three successive grain crops in four years, was much too heavy to admit of much improvement, unless on land of uncommon fertility; though I was much staggered in this opinion by the great success of several of the most skillful cultivators of the soil on James River, who highly recommended this system after a trial of some years, and after having greatly increased their crops, and evidently having effected a great degree of improvement on their fine estates, though practising this system all the time. You will understand me as referring particularly to my worthy friends of Shirley and Westover, whose valuable communications to your paper have been so instructive and interesting to many of your readers, myself among the number.

After a full and fair trial of this system, but on



my best land, I am now prepared to admit that a very considerable degree of improvement may be attained under it on all lands that can be relied on with certainty to bring clover, unless light soils should prove an exception; and I rather incline to think that land of that description will not bear as hard tillage. It must, however, in candor, be stated that I have made a very free use of lime on the farm on which this system has been in operation for some years past; and by ensuring the clover, and otherwise improving the land, it has undoubtedly been a great aid to me. It must be recollected, too, that this system has been so far modified in this instance as to give very full crops of corn, there being a light field attached to the farm, which has been exclusively devoted to corn ever since this system was first adopted. The crops of wheat and corn have both increased very considerably on this farm, and one year, a very remarkable one with us, I harvested nearly or quite 24 bushels of wheat throughout the crop per acre. The part, however, after a previous crop of wheat and corn, amounting to about 105 acres, had failed completely as a fallow; which no doubt made the 3d crop much better than it would otherwise have been. On an adjoining farm, which has been subjected to the three-field system, and has had the benefit of lime and a standing pasture, clover and plaster, and the fields been never grazed till the fall, and then very lightly, the degree of improvement I consider to have been far greater than on the farm in four fields; which is of rather better quality naturally; and ought therefore to have improved faster, if the system pursued had been equally ameliorating. Of course great care is taken in collecting and applying putrescent manures, but the one farm has no manner of advantage over the other in this respect. The crop of corn of last year on this farm will, I believe, make fully 8 barrels per acre, which is the largest yield from a field of the same extent that I have ever known to be obtained in this neighborhood. This crop of corn was laid off in checks, 2 stalks left in a station; and cultivated after the first ploughing with the double shovel plough, except the wetter portions of the field, comprising not more than a fourth of the crop, which we were compelled to have in beds that the water might run off readily. On the whole I am convinced that land of original fertility, with the aid of a standing pasture, lime, clover and plaster, and with proper attention, in collecting and applying other manures, may be improved as rapidly as necessary in three fields, and that it is an excellent system with these aids. In comparing the two systems, I should say that the amount of sales would be considerably greater under the four-field system, but that the expenses would also be greater, and that the improvement would be steadily progressive, though less rapid than under the three-field system. On a fine wheat estate, where the teams and labors are equal to it, I should unquestionably prefer the four-field system, as combining a great deal of profit with sufficient improvement. Many of your readers may consider this subject to have been long ago exhausted; but as far back as in 3d vol. of the Farmers' Register, I engaged at some future time to give the results of my experience in regard to this system, when I should have tested it fairly; and

I trust that I shall be excused for having redeemed that promise on the present occasion, and that I will not be found to have shown too strong a leaning to my former opinions.

The practice of having winter farm-pens contiguous to the land to be improved, is, I believe, very general on the lower James river, and cannot be too highly recommended. In driving the cattle to and from water, I have observed, both here and elsewhere, that the land is sometimes very much and very extensively poached, and that the servants, whose business it is to drive them to water, are very much exposed in bad weather. It occurred to me several years ago that a well in our flat country, for the use of the cattle during winter, would be a great comfort both to them and to the servants, and that the expense of digging would be very inconsiderable. I accordingly adopted the plan, and can confidently recommend it to others, situated as we are, where water may be obtained by going down about 20 feet. Some of these wells are kept open to be used on future occasions for the same purpose, and others are filled up as soon as the cattle are removed. In the tobacco country, where, however, my observation has not extended very far, I do not recollect ever to have observed their temporary farm-pens in use, and I cannot but believe that the general use of them in that region would be attended with great benefit. In this way, remote parts of a plantation may be improved, which would never receive the manure if made at some central point, because the labor necessary to get it in place in the spring can never be spared at that busy season, if the manure has to be hauled any great distance. Where this plan is pursued, the rough food and litter for the cattle are carried to the farm-pen, from time to time, during the winter, as convenience and necessity require, and in the busy season of spring, the whole mass is at a convenient distance from the land to be improved. It must be recollected, too, that in the spring oxen are weakest, and least able to endure hard work, and to lighten their labor at that busy period is a great point gained. Perhaps it may be thought that I am trespassing upon the patience of your readers, in formally recommending temporary winter farm-pens; but I beg that it be recollected, that this practice, old and common as it is, may yet be unknown to many of your subscribers, and to every such one I can venture to say that these farm-pens properly managed will be found a valuable aid in the improvement of all large farms. By-the-by, the habits of selecting subjects that are novel, and overlooking whatever is not much out of the common road, though perhaps far more useful, is, I verily believe, one of the greatest impediments to the general diffusion of agricultural knowledge. Agriculture has been practised too long to admit of many new discoveries being now made; and, therefore, to ascertain and collect the most valuable practices, is as much as any ordinary man at least can hope to achieve. Indeed I am fully of opinion that if all the most valuable practices now known, even in Virginia, could be collected and brought into successful operation on any one farm, the result would be such as to astonish even the most sanguine cultivator of the soil.

It is much to be lamented that there are so

few fixed principles amongst agriculturists, and very difficult to account for. There is scarcely a single point that seems to be fully settled, and that we do not hear controverted by men of sense and experience. As long as this continues to be the case, we may despair of any great progress in improvement. Many very successful and observant farmers, with the advantage of long experience too, contend for grazing from the time clover is fully headed, as necessary to ensure heavy crops of wheat; taking care, however, not to graze the land too long, or too closely; and this indeed appears to be the prevailing opinion amongst the best managers of my acquaintance. The experience of others, however, is that the more clover turned in, the larger will be the crops of both wheat and corn, and the greater the improvement of the land. Perhaps the use of lime and marl, or perhaps the nature of the soil, may satisfactorily account for this difference of opinion.

I have recently learned, from the highest authority, that rye is fast substituting the place of clover as an improver in Ohio. The rye is sown at the last working of the crop of corn, and at maturity hogs are turned in to get all the benefit they can from the grain, on which they are said to thrive very rapidly, and the land is thought to be very much improved at the same time. There is often a second crop, without other cultivation than is afforded by the rooting of the hogs, from the seed left in the straw, or dropped by the hogs. Rye is not very well suited to this climate, but perhaps on light, thin lands, that cannot be relied on to bring clover, this may prove to be a valuable practice even here.

On all lands adapted to the clover culture, the result of my own very limited experience is, that clover is the most valuable of all putrescent manures, because applied at less expense and more extensively than any other means of improvement, known to me, will profitably admit of. I would decidedly prefer giving up all other manures in use amongst us, with the exception of lime and marl alone, rather than abandon the cultivation of clover, of which it seems to me very difficult to give the land too much. Indeed, without the use of clover, the effects of lime and marl would in my opinion be diminished at least one half.

Our wheat and clover are sufficiently advanced, and promise well, but the prospect for corn is bad beyond precedent. W. B. H.

*Prince George, May 15th, 1841.*

#### HESSIAN FLY AND OTHER WHEAT INSECTS.

*From the Farmers' Cabinet.*

The Hessian fly, I believe, first made its appearance on Long Island, N. Y., in 1776, or soon after the Hessians were there, and is supposed to have been introduced among some straw which they brought with them; hence the name; but the late Judge Peters, that great friend and patron of agriculture, in his notices for a young farmer, says, that the insect was unknown in Hesse, "that its name does not prove its importation, for that appellation was bestowed during our revolutionary excitements, when every thing we disliked was called Hessian." The insect has been accurately

described by Mr. Say and Dr. Chapman; but Mr. Say was mistaken respecting the deposit, as the aperture which he noticed in the sheath of the leaf, was occasioned by the insect passing into the winged state, and not perforated in the act of depositing its eggs. The fly is of a dark color, about the size of the mosquito, and the male much like it, except the wings; the body of the female is larger; the wings rest horizontally, and where they join the body are almost pointed, gradually expanding towards the other end, where they form nearly a semicircle. The egg is scarcely discernible to the naked eye, is oblong, of a pale red or amber color, and placed in the gutter of the leaf, from half an inch to an inch or more from the stalk; the caterpillar, of a pale red color, is hatched in a few days' time, (according to the state of the weather,) and passes down the leaf to its junction with the stalk, thence between the sheath and stalk, to near the root or joint; it there becomes stationary, feeds on the sap of the plant, and, being blanched by its covering, is mistaken for the egg. The first deposit takes place from the fifteenth to the last of April, (as the season may be,) changes to the pupa from the first to the middle of May, and evolves in the winged state, the latter part of that month. The second generation commences from the first to the middle of June; the fly chooses the stunted plants, and deposits both on the top and underneath the upper leaf, and the larvæ pass to near the two upper joints, but are found mostly about the upper, and in such numbers as many perish for want of food, the increased number being so disproportioned to the plants which suit their purpose; I have counted upwards of two hundred eggs on a single leaf. The third deposit is made in the manner of the first, and commences about the fifteenth or later in August, and is continued on until cold weather; the irregularity of this generation is occasioned by the various situations in which the pupa of the second is thrown, it is lodged in the straw of the stunted plants, so that in harvesting, much of it is scattered about the stubble-fields and the rest is carried to barns or stacked; such as is early exposed to heat may produce a fourth generation, whilst that which is covered till winter may not give a third.

On discovering a fly in the act of depositing, I secured it, and on examination (making the best calculation that I could, and not knowing whether it had deposited any eggs before) I supposed it to contain one hundred eggs; if such be the fact, the first deposit would be one hundred; the second ten thousand, and the third one million, all in the course of one year; happily, however, they have enemies which vastly reduce their number.

The only plants, according to my observations, which are subject to the depredations of the fly, are wheat, rye and barley; rye, owing to its early spring growth is not much injured; grain should be sown (in this climate) about the first day of October, as that sown afterwards suffers more from the winter than the fly.

The only remedy which I have any confidence in, must be applied to the second, or summer generation, (it is the only one that I think can be assailed with any prospect of success,) whilst in the pupa state, by ploughing the stubble-fields before putting in the next crop; in that case,

grass-seed could not be sown among the grain; but by changing the course of cropping, beginning with wheat, rye or barley, followed by corn, and ending with oats and grass, the difficulty might be avoided; nor need the stubble be ploughed till towards the first of April, or any time during the winter; plants about stacks and other places must also be attended to; and let it be remembered that farmers must pursue the same plan, as it is in vain for a few individuals to attempt an object, whilst thousands are united to oppose it. I will further observe, that the surest way to raise a good crop of any grain, subject to injury from the fly, is to put the lands in a proper state of cultivation, as where that is the case, and when the season proves favorable, little or no damage will be sustained, although the fly may be very numerous, as it certainly is every year. It is folly to sow wheat on a poor soil.

The insect described by Miss Morris is not the Hessian fly, and I think she is mistaken in the manner of depositing its eggs; it appears to be the same as that noticed by me in 1823; it has three generations in the course of a year, and is observed a few days earlier than the Hessian fly, and the same remedy may be applied to both; the spring and fall generations are to be found near the roots of the plants, and the summer are at the several joints. There is another insect lodged in the straw above the upper joint, which causes the premature appearance of ripeness of the head and prevents the grain from forming; it has not yet done much injury, but may hereafter increase.

There is also an insect which attacks the roots of wheat and causes the stunt or sedge; it is probably a species of aphid, and the remedy must be applied to the soil. I would recommend salt or ashes; perhaps lime might be good.

JAMES WORTH.

Sharon, Bucks County, 1st March, 1841.

#### PROPOSAL TO TRY HUSSEY'S REAPING MACHINE.

To the Editor of the Farmers' Register.

Baltimore, April 14, 1841.

As some uncertainty is felt amongst the farmers of your state with regard to the usefulness of my reaping machine, I beg permission to make a few remarks in your valuable journal, which, as coming from me, will be taken for what they are worth. I, last spring, sent to order several reaping machines to gentlemen in the counties adjacent to Richmond, and followed them myself, early in the harvest, to put them in motion. A part of these machines were on my former plan, which had been proved several years, such as had been favorably noticed in your journal, and part were on a new plan as respects the horse-power, which had never been proved, but had been very generally preferred for their simplicity, by those who examined both at my manufactory; the former gave full satisfaction as far as I had any knowledge, and especially so while I was present; the latter proved defective in a certain arrangement to accommodate the raker, and in a piece of cast iron which should have been wrought. I discovered the principal defect in five minutes' cutting in Goochland county. Fearing the disastrous consequences

which might follow to the credit of the machine, I immediately wrote to all who had chosen machines of this description, apprising them of the difficulty which I had met with, and describing the alteration necessary to be made, and proceeded myself with all haste to Charles City county, where I considered my assistance most necessary. One gentleman in that county had ordered by letter such a machine as had been recommended by the Delaware Agricultural Society. Such was of course sent to him; this was one of my former plan. Two other gentlemen of the same county employed a friend to act for them, who, on examining the machines at my manufactory, aided by a professed mechanic, made choice of two machines on the new plan. On my arrival in Charles City, I soon discovered that the gentlemen who had received these two machines were not satisfied with the choice their friend had made, believing the other kind to be the best. One of these gentlemen informed me, that he did not get the machine because he needed it, being overstocked with hands; it was, (under these circumstances,) not to be wondered at that he should regret the purchase when he found that his machine, which he considered of an inferior kind, could not be used without alteration, although it required but one day's work to alter it. I mention this, believing that whatever unfavorable reports have spread in Virginia have chiefly arisen from these circumstances. It should be borne in mind that it requires experience to use any machine with success, however good the principle may be; hence one so new to the community should not be condemned too hastily, while so great an amount of evidence from Maryland can be produced in its favor. It is admitted that it may not do every thing that may be expected of it when proper management is not used; for instance, when the wheat is rank and mixed with grass, the cutters should be raised to the highest point; if it be thin and short they should be put at the lowest point; but this is not often thought of, and more seldom practised, at first, especially when the farmer, as is often the case, depends entirely on his laborers to manage the machine—added to this seeming difficulty, the awkwardness of his hands before they become practised. The opposition and designed awkwardness of a class of cradlers, whose interest it is that the machine should fail, and the apprehensions thus created that the machine may not prove useful, will be very likely to tire the patience of the farmer, however well the machine might work in other hands. The consequence is, the machine would be represented (and honestly and correctly according to the impressions they received by the farmer,) to be of doubtful utility; and others are deterred from purchasing.

Whether this machine is or is not a useful invention, should by this time be a settled question. That it is not so settled in many sections of the country may be accounted for by the very short time it can be used in each year, and from the fact that, like all other machines, it must be tried, improved, and tried again. Hence the reaping machine requires more time to perfect it than those improvements which can be experimented with every day in the year.

Wishing, for my own interests, as well as for the interests of agriculture, that the machine should be better known in Virginia, and believing that

while you would do justice to the mechanic, you are particularly watchful that the farmer be not imposed upon, I will very respectfully make the following proposition to you, hoping it will receive your favorable notice. I propose to send to you, without any expense to you whatever, two reaping machines; one of each kind, to be wholly subject to your control, and direction, so far as to obtain for them such a full and fair trial at the next harvest in grain of every description and under all circumstances as shall be fully satisfactory to yourself and your agricultural friends. I will hold myself in readiness to attend upon them at any time and place which you may fix upon. As you will not probably interest yourself in this matter unless it should promise some useful result, I have procured for the consideration of yourself, and your readers, the annexed certificates, which refer to machines of the new plan only; the inefficiencies were however remedied before they left my manufactory. Certificates equally full can be procured for machines on the old plan.\*

OSBORN HUSSEY.

Mr. Hussey's proposal and plan of trial of his machines are fair and liberal, and we trust will serve to settle the question as to the degree of their value. As we were desirous of obtaining the best means and subjects for a full and accurate trial, and not being so situated as to be able to perform directly the services required of us for this end, some time has been necessarily lost in making the satisfactory arrangements, which we are now authorized to announce. Wm. B. Harrison, esq., at our request, has consented to take charge of the trial of the machines, and have it properly made during his harvest, on his estate, Upper Brandon, on James River, Prince George county. There could be no better field selected for a full and complete trial, than this estate offers, nor one better qualified than its proprietor to observe accurately and report correctly the results—which will be done through the Farmers' Register.—ED. F. R.

#### CAUTION TO SILK CULTURISTS.

To the Editor of the Farmers' Register.

Stafford, Va., May 15, 1841.

As the season for beginning the rearing of silk-worms is near at hand, and as some of your readers will commence the business this summer, I hope you will give space in the Register for a few brief cautions, that may be useful to the inexperienced.

1. To all new beginners I say, do not hatch too many worms at first, nor expect to derive much profit from your first experiment. The knowledge derived from experience, which alone can enable you to conduct the business with economy of labor, will amply remunerate in subsequent operations all who will have patience and perseverance enough to pursue the business a sufficient time to learn how to manage it well.

2. Beware of expending much for new and

\*The certificates are among the advertisements of this number.—ED. F. R.

highly puffed fixtures, until you learn from experience that they will accomplish all, or nearly all, that their inventors and advocates claim for them. An old practice has been sent forth under a new name, (the "non-cleaning system,") which, I fear, will be productive of mischief in several ways. The general impression made on the minds of the inexperienced is, that cleanliness may be dispensed with. Beware of practising on this opinion. I have fed with branches\* for several seasons, as late as the 25th of June, and the plan works well, with proper attention to cleaning, and when the mulberry trees are judiciously pruned. The mulberry trees must not be pruned at the farthest later than the 1st of July, and then the pruning should be conducted with regularity, and the ground ploughed or hoed, immediately after the operation. With a sharp pruning bill take off from 1 to 2 feet of the top, and cut every lateral branch close to the main stem. Trees pruned in this manner, and cultivated immediately, will yield an abundant supply of leaves, the next year, and you will have a well-balanced tree; but if one or two small branches be left, they will attract nearly all the sap, and the shoots from the other joints of the stem will be feeble. But a reckless mowing down of the trees in July and August will soon end in their destruction. This practice has been known to destroy the elder, (*sambucus nigra*;) that hardy pest of American farmers.†

3. Leaves gathered in the heat of the day must be spread and stirred with a stick before they are given to the silk-worms. If given to them when warm they produce disease. And whenever large quantities of leaves are brought to the feeding room, to be kept even for one or two hours, care should be taken to spread them in thin layers. If fermented leaves be given to the worms, their destruction will certainly follow; although most of them may live until near the period for spinning.

4. Let the silk-worms have (especially in the last age) an abundant supply of fresh air. The windows should be kept partially open, at least, day and night, and even during thunder storms. A modern inventor has found out that the admission of the exterior air is not very important. He ventilates the worms, and is not solicitous about keeping up currents of air through the building. Beware of this crude and new-fangled notion.

5. After the worms have formed the cocoons, attend carefully to the directions for killing the chrysalides, found in the Farmers' Register and the Journal of the American Silk Society. If the use of camphor, as recommended by Miss Rapp, should be practised, strict regard to her directions, as to time and manner, is essential. The cocoons must be carefully assorted, and if kept in the box too long they may be seriously injured by fermentation.

LAYTON Y. ATKINS.

\* The practice of feeding silk-worms by laying over them branches of the mulberry has probably been pursued at Brousa, in Asia Minor, for several centuries. (See an extract from a letter of Miss Par-doe, published in the Farmers' Register, vol. vii. p. 412.)

† Some persons have adopted the notion that the *morus multicaulis* cannot be killed. Let such pursue the mowing plan in July and August, for one or two summers, and they will find themselves in the condition of the man who killed "the goose that laid golden eggs."

**GENERAL RESULTS OF DIARY OF THE WEATHER, KEPT AT FORTRESS MONROE, (OLD POINT COMFORT,) VIRGINIA.**

Year.	Month.	THERMOM.					WINDS.										WEATHER.				RAIN.
		Highest degree.	Lowest degree.	Mean temperature.	Hottest day.	Coldest day.	Days North.	Days North-West.	Days North-East.	Days East.	Days South-East.	Days South.	Days South-West.	Days West.	Prevailing.	Days fair.	Days cloudy.	Days rain.	Days snow.	Prevailing.	Inches.
1836	July	86	67	75	25	5	2		9	1	3	9½	7		S	22	9	6		Fair	6 3-10
	Aug.	86	65	75	1	10	1½		12	4	2½	2	8	1	N	24½	6½	9		do	52-100
	Sept.	88	62	73	20	30	1		11½	2	5	1½	8	1	N	27½	2½	3		do	8 1-100
	Octob.	71	41	56	3	27	2	3	9	1	2	4	8	1	N	24	7	4		do	27-10
	Nov.	58	25	44	10	26	4	5	5	2	1	5	5	4	W	23	7	5		do	4 7-10
1837	Dec.	62	18	37	13	28	6	3	3	2	5	5	5	4	S	24	7	6	1	do	3 4-10
	Jan.	46	14	32	31	2	7	3	3			4	5	9	W	22	3	2	4	do	1 6-10
	Feb.	60	18	38	27	18	3	1			4	5	2	13	W	19	3	5	1	do	2 5-10
	Mar.	62	26	45	21	3	6	1	1		2	10	3	8	S	23	4	4		do	2 4-10
	April	78	34	54	19	3	4½	½	1	2	1½	19½	1	6½	S	22	6½	1½		do	9-10
1838	May	84	54	55	30	2	2½	½	5½	5½	5½	8½	2	6½	S	23	5	3		do	2 2-10
	June	96	62	75	4	19	5		2½	3	12½	10½	1	6	S	20½	6½	3		do	3 5-10
	July	96	66	79	31	25	4		10	4	10	10	1	2	S	18	10	3		do	2
	Aug.	94	61	77	30	24	1	7	6	8	2	6	1		E	23		8		do	9 5-10
	Sept.	92	58	68	28	16		4	7	14	3		3	2	E	19	5	6		do	5 6-10
1839	Octob.	89	42	64	24	27	10	3	7	3	3	1	3	1	N	23	6	2		do	5-10
	Nov.	73	30	54	12	27	2	4	10	2	6		5	1	N	22	2	6		do	29-10
	Dec.	66	30	46	3	14	1	5	17	5	4	1	3		N	18	6	6	1	do	9
	Jan.	67	24	45	18	11	6	11	5	2	1	1	3	2	NW	20	6	4	1	do	27-10
	Feb.	54	17	33	8	3	2	6	6	2	1	1	4	6	N	17	4	4	3	do	18-10
1840	Mar.	69	27	48	24	1	3	3	11	3	4		6	1	N	17	7	6	1	do	2 2-10
	April	78	34	54	28	20	1	2	6	8	4	2	3	4	E	18	6	6		do	28-10
	May	84	47	63	22	9	2	1	6	6	4	4	5	3	N	19	6	6		do	1 1-10
	June	88	60	41	11	6	2		1	9	4	4	6	4	E	20	4	6		do	4½
	July	94	72	82	20	13	1	1	4	8	4	2	7	4	E	26	5			do	2 4-10
1841	Aug.	92	71	81	11	2	1	1	6	9	7	3	4		E	28	1	2		do	1 3-10
	Sept.	89	50	72	1	23	3	1	15	5	3	1	2		N	14	11	5		Cl'y	16 4-10
	Octob.	76	43	59	5	30	4	7	6	2	1	1	8	2	NW	23	2	6		Fair	4 6-10
	Nov.	69	19	49	15	26	2	7	4	4	1	4	2	6	SW	15	10	4	1	do	3 7-10
	Dec.	59	22	38	12	24	2	5	7	1	2	5	4	4	N	16	9	4	2	do	1 6-10
1842	Jan.	62	21	39	11	24	0	14	9	1		5	6	1	NW	18	5	5	3	do	8 1-10
	Feb.	64	28	43	23	6	1	4	6	1	2		9		SW	15	7	6		do	47-10
	Mar.	72	20	48	19	4	1	4	8		3		14	1	SW	17	5	7	2	do	5 3-10
	April	80	42	56	28	15	4	2	10		3	1	10		SW	17	8	5		do	37-10
	May	85	52	68	25	4			5	1	8	5	10	2	SW	18	8	5		do	5 5-10
1843	June	92	60	72	13	2		3	4	1	8	4	9	1	SW	20	5	5		do	4 8-10
	July	93	63	80	31	6	1		4	1	9	2	14		SW	21	3	7		do	4 5-10
	Aug.	92	59	74	8	31	1	3	8		6	1	12		SW	13	7	11		do	14 2-10
	Sept.	86	52	69	9	13		3	8	1	6	2	10		SW	20	8	2		do	1 2-10
	Octob.	76	54	63	4	2	1	1	16	2	4	1	6		N	18	9	4		do	6 8-10
1844	Nov.	68	29	47	15	22	1	7	8	1	2	1	7	3	N	15	11	4		do	3 6-10
	Dec.	50	28	39	3	30		16	6		3		6		NW	16	11	3	1	do	9 6-10
	Jan.	58	17	34	30	2		9	8	1	2	1	9	1	SW	19	8	2	2	do	1 6-10
	Feb.	67	22	47	27	4	3	4	4	5	5	6	2		S	19	7	2	1	do	3 2-10
	Mar.	72	33	51	17	11	1	3	3	3	7	1	9	4	SW	18	8	4	1	do	4
1845	April	82	50	61	25	1		1	8	3	8	6	3	1	N	21	7	2		do	5 9-10
	May	82	52	67	4	11	2	2	6	5	3	4	6	3	SW	19	7	5		do	5 9-10
	June	88	63	74	12	7	1	1	6	2	5	6	7	2	SW	20	7	3		do	11 1-10
	July	92	68	75	23	3	1		9	1	6	7	5	2	N	23	1	7		do	13 5-10
	Aug.	90	69	78	6	7	1		6	5	3	7	8	1	SW	24	2	5		do	5 5-10
1846	Sept.	86	58	69	9	22	2	7	9		1	5	6		S	25	1	4		do	7 6-10
	Octob.	82	38	63	2	26	1	2	4	7	4	7	6		S	25	3	3		do	6 4-10
	Nov.	64	33	49	6	19	3	8	9	1	3	1	2	3	N	24	2	3	1	do	2 8-10
	Dec.	58	19	45	3	19	5	6	10		2		5	3	N	25	1	5		do	6 6-10

## THE USE OF AN OWL IN KILLING CROWS.

From the Frankfort (Ky.) Commonwealth.

A man ought not to be *hooted* at, if he does tell a story about an owl, provided the anecdote tends to the promotion of the great interests of agriculture. And we may as well promise here, that we do not mean to talk about one of those little screeching things, that sit on the eaves of houses during the livelong night, watching for mice, and uttering the most piercing lamentations all the while. No, indeed: we are alluding to one of those whapping big fellows that sometimes raises a war-whoop right over your head as you are riding through the dark woods, and makes you feel, for a moment, as if your scalp was gone. Speak of your hair standing on end, at tales of ghosts, and all that sort of stuff! Those are mere fire-side affairs, and don't last much longer than you are toasting your shins. But if you wish to know something of a shock that will drive through your bones into the marrow, just go by yourself through a beech flat of a dark night, with your mind running upon Indians, robbers, and other such sweet fancies, until you feel as if you hadn't half an inch of breath left any how—then, let one of those night eagles thunder—whoo-hoo, whoo-hoo, whoo-hoo-agh into your lungs, and, by gracious! you'll think that you've become an eternal fixture in the shades. It does to laugh at when you get home, but for the moment it is capitally horrid. There are many people who never saw one of those big owls, or heard one either, and we will therefore for their benefit say, he is a large bird with a huge head, a profusion of rusty feathers, a round gray eye, that seems to look everlastingly ahead and right through any thing that is before it, has very formidable talons, and, in a word, is the king of all things that fly in the dark. He is carnivorous in his appetites, and walks into young rabbits, partridges, and that kind of fry, with remarkable unction. He does not make friends of many living things, which probably arises from his habits of midnight assassination, and skulking when the rest of the world is in motion. He moves like a shadow, not making the least noise in his flight, and he is, upon the whole, a most excellent pattern for a cut-throat. Yet, with all his advantages of size, position and profession, he is not suffered to be the sole marauder upon the great common of the poultry yard, for he has an enemy of a most determined and implacable character. The enemy is not, as might be supposed, armed with weapons of war equal to himself, nor with the same awful voice, nor even with the same fierceness of eye, yet he makes up with combination and vigilance what he wants in strength, and just let an owl show himself in the light of the sun, and forthwith a legion of crows will be upon him, making such a clatter about his ears that he will find the very day hideous, and ignominiously fly before the black regiments that are charging upon him. And this brings us to our story.

A farmer living in this county, has been so exceedingly annoyed with crows that he was willing to hunt them by militia companies—to offer rewards for their heads, to poison them, or to kill them off by a legislative tax. Year by year was he molested by these depredators, which would tear up his corn by the acre, pick out the eyes of his

lambs, fly off with his young chickens, and annoy him in every conceivable way. It was in vain that he took his gun upon his shoulder and went in pursuit, no caution that he could devise would bring him in shooting distance. The rascals would caw at him, and caw at him, and snigger to see how he “larded the lean earth,” as he walked along of a hot day, vainly following on their provoking banters. Neither he nor his man of straw in the field was the least terror to the evildoers, and they plundered with perfect impunity. Our Franklin farmer meditated long and deeply upon the manner in which he should redress his wrongs, and like a true philosopher, he sat himself diligently to the study of *the nature of crows*. He soon found out all their system of sentinels, their notes of alarm, their sounds of encouragement, &c., but from these he could gain no knowledge that would avail him.

While, however, he was one day watching a large flock, his attention was arrested by an unusual commotion among the black scoundrels, and forthwith they all darted in one direction. He beheld in his surprise a simultaneous attack upon a large owl which had imprudently ventured forth into the light, and such another battle he never did see, until at last the owl, like himself, was fairly vanquished by the crows, and made a precipitate retreat. Our farmer was too interested a spectator of the combat not to reflect much upon its character and result, and all at once it occurred to him, that, if by any means he could get possession of an owl, he could make him decoy the crows within a reasonable distance. Luckily for him, he was soon enabled, by a successful shot, to break the wing of one of the largest of the tribe, and he lost no time in putting his scheme in operation.

Accordingly, at early dawn he sallied forth with dire intent, and surcharged with the spirit of extermination and venom. He selected a tree near to his fence, but conspicuous in the field. A lad was sent up the tree to put the owl upon his perch and the farmer ensconced himself in the corner of one of the panels. Scarcely were these things completed, before a distant and well known caw broke upon his ear, and anon the air was darkened with a flight of crows, all making, like the Cuirassiers upon the Scotch Grays, a furious onslaught upon the wounded enemy. “Ha, ha, cried the farmer; I’ve got you at last!” and bang went his gun, and down tumbled a couple of crows. But the fire of the gun had no effect upon the rest. They still continued in furious rage to fly at the owl, and ever and anon the farmer would fire away, and at every crack he brought ’em. Faith but it was a goodly sight to see how soon the owl got into the hang of the game. For, at each dreary pause, while the farmer was reloading—the sagacious captive would ruffle his feathers and snap his bills together, and manifest to his enemies the most aggravating and insulting behavior. This would exasperate them beyond bounds, and at him they would come again—bang would go the gun, and at every crack the owl fairly chuckled with delight, giving one of those knowing winks, which was as much as to say “don’t we nick ’em.” The slaughter was continued until the farmer desisted, from mere weariness. He then went home like a conqueror with his heaps of slain, and gave his

new ally a stupendous feast on the bodies of his slaughtered foes. Every day was this manoeuvre repeated, and with the same success, until nearly every crow about the plantation had been killed. The fame of this affair soon spread to the surrounding plantations, and every neighbor borrowed the owl and put him to the same successful and profitable purpose. As may be supposed, good care was taken of the owl, and for two seasons he was the greatest benefactor of the neighborhood, and had been the death of as many of his foes as Ghengis-Khan or Napoleon. Unluckily on one occasion he sallied forth alone from his confinement, and not being able to fly, he attempted to swim across the Elkhorn. This was a new and untried element to him, and, like other renowned warriors and statesmen, he was lost venturing upon an experiment. That he was put to a great public use, there is no doubt, and if ever a bill is again introduced into the Legislature "Providing for the killing of crows," it would be but an act of justice to put in a section directing a monument to be erected to Joe Davis's owl.

Whoever doubts the truth of the story has only to try the experiment with an owl, and he will soon find that there is no joke in the matter.

#### ON GATHERING ASPARAGUS.

From the Magazine of Horticulture.

In all the books of gardening which I have seen, the direction for gathering asparagus has always been to cut it several inches below the surface of the ground, as soon as the stalk has advanced a few inches above it. The asparagus generally brought to market is cut in this way, the upper half being green and tender when cooked, the lower half white, tough, and uneatable. The experience of many years has taught me that it is far better to let the asparagus grow to the height of ten inches, or a foot, and then to gather it by breaking with the fingers, as low down as it is tender and breaks easily, which, when the weather has been warm, is generally from six to ten inches. Asparagus, thus gathered, will be found to be much finer, the whole being tender and eatable, the produce much greater, and the process attended with no disadvantage whatever. Asparagus even two feet high, will be found fit to gather in this manner, if at any time it has outgrown the consumption or escaped attention, which indeed was the occasion on which this new method of gathering occurred to me. I have since always practised it. Let those who are fond of asparagus give it but one trial, and they will never again resort to the old system. O.

#### TRANSFORMATION OF OATS INTO RYE.

From the Year-Book of Facts.

Dr. Weissenborn represents a statement of this phenomenon to have been corroborated in the last annual report of the Agricultural Society of Coburg, which asserts this transformation to take place if the oats be sown very late (about Mid-

summer-day,) and cut *twice* as green fodder before shooting into flower-stalks, whereupon a considerable number of the oat plants do not die in the course of the winter, but are changed in the following spring into rye, forming stalks which cannot be known from those of the finest winter-rye. "Let any one sow the oats during the latter half of June, and the transformation in question will certainly take place!"

[This statement may be thought valuable confirmatory evidence by the advocates of the transformation of wheat to cheat. On the other hand, too much proof is sometimes as bad as too little; and when it is maintained (as above) that oats are changed to rye—and in other cases it is as firmly believed that wheat is changed to spelt, or darnel, and to cockle, and flax to cheat—the stoutest advocate of the transmutation of any *one kind only* may begin to be embarrassed by the superabundance of evidence, for similar and yet very different facts.—Ed. F. R.]

#### THE MILK SICKNESS.

From the Baltimore American.

Besides many other articles in the April number of this Journal, [American Journal of the Medical Sciences,] there is one of much importance, by Geo. B. Graff, M. D., of Illinois, on the milk sickness of the west. Our readers no doubt remember seeing various notices of the sufferings and mortality which this disease has caused in the western states. It attacks beef-cattle, horses, sheep and goats. Cattle may be affected to such a degree as that their flesh and milk will produce the disease in man, and yet the cattle themselves manifest no unhealthy symptoms. In a severe degree, the disease in the inferior animals is attended with formidable symptoms.

Dr. Graff has given a full description of the sufferings as they occur in man; and he says, a minute quantity of cream, butter, or cheese from the milk of an infected cow, although without any distinguishing appearance, odor, or taste, will develop the disease. The most violent and fatal form, it is generally thought, is produced by eating a few ounces of infected beef. The cause of the disease in animals is not known; it appears to be limited to circumscribed localities in all the western states, especially in Illinois. The disease can be traced in one locality for nearly a hundred miles, in a vein of variable breadth, parallel to the Wabash river, in Indiana. Not the least important part of Dr. Graff's essay is a paragraph in which he bears the following testimony to a criminal, and almost incredible, disregard of human life and happiness.

"There is a murderous practice now carried on in certain districts, in which the inhabitants will not themselves consume the butter and cheese when manufactured; but with little solicitude for the lives or health of others, they send it in large quantities to be sold in cities of the west, particularly Louisville, Ky., and St. Louis, Missouri. Of the truth of this I am well apprised by



actual observation, and I am as certain that it has often caused death in those cities, when the medical attendants viewed it as some anomalous form of disease, not suspecting the means by which poison had been conveyed among them. Physicians of the latter city, having been questioned particularly on this subject, have mentioned to me a singular and often fatal disease which appeared in certain families, the cases occurring simultaneously, and all traces of it disappearing suddenly, and which I cannot doubt were the result of poisoned butter or cheese."

#### SILK-WORM REARING IN ARKANSAS. IMPORTANCE OF CALCAREOUS SOIL TO GRAPE VINES.

To the Editor of the Farmers' Register.

Washington, Ark., March 5, 1841.

Believing that every new experiment in silk-growing, on however small a scale, that has proved successful in a first attempt, deserves a passing notice, I have to contribute my mite, in the hope that it may not be unacceptable.

I received, on the first of March last, from G. B. Smith, esq. of Baltimore, a package of silk-worm eggs, which began hatching on the 4th—having no doubt been heated in the mail-bags to the hatching temperature. They were left exposed in a cool room, to all the vicissitudes of heat and cold, no fire being ever lighted in the room, with a view of testing the *natural* method, strictly. The worms were kept supplied with young multicaulis leaves, of which there were plenty, and each day's hatching kept separate. They continued to hatch, 20, 30, 50, to 100 a day, for the space of more than six weeks—the thermometer frequently falling as low as the freezing point, and sometimes ranging thirty degrees in twenty-four hours. The worms all matured, without the loss of one that was discovered. And of the same parcel of eggs, on the same sheet of paper, those first hatched commenced spinning before the last were hatched. The supply of eggs being small, I was desirous of not losing any; and they were therefore fed, watched, and cleaned with the utmost care. No perceptible difference in the size or healthiness of the worms, from the first hatching to the last, and not a bad or imperfect cocoon among them. Those hatched on the 4th of March spun on the 22d of April, and those hatched on the 24th of April spun on the 22d of May. During the last age the worms were fed with leaves on the branches, the limbs at each feeding crossing the limbs laid on before; and the pile of brush thus formed made a very convenient place for spinning, with which the worms appeared content; and the cocoons thus made were equal to any formed in the other various conveniences recommended by writers on the subject, in which I had arranged different portions of the worms. The kind I reared was the Italian Gray, sulphur colored. The 1000 selected for seed weighed 5 lbs. 6 oz. avoirdupois. We succeeded in reeling the remaining cocoons, without difficulty, on the cotton reel, to which I had adapted fixtures for running two threads at a time, wrapped round each other, as in the reel of Piedmont, but without the traversing bar. This silk has since been manufactured into sewings of good quality, on the common wheel.

I cannot expect my method of hatching will be generally adopted, but I am not sure but it may be the best for ensuring a hardy breed of worms. At least I am encouraged to repeat the experiment this season. I am preparing to feed a million of worms this season, being plentifully supplied with multicaulis and white mulberry. This latter I find very convenient for alternating with the first, in feeding the leaves on the limbs, from the slender stems forming such a neat pile for the formation of cocoons.

I have satisfactorily tested your theory of calcareous soils being best adapted to grape vines. My crop of grapes of 1839 was bountiful, indeed,—fully ripened, full bunches, and without the sign of spot or mildew to be seen, on that part of the vineyard that had been marled. But a few vines, of equal thriftiness, and pruned and cultivated in all respects similarly, except not being marled, spotted and mildewed three-fourths of their grapes as usual. During that season, however, we were favored with abundance of rain, nearly 12 inches having fallen in the month of July. I deem this a matter of consequence in our climate, and will render it important to be prepared with the means for irrigation, should a drought render it necessary, during the perfecting of the fruit. The summer of 1840 was very different. Until the first of June my vines were as thrifty, as fully set with fruit, as clear of mildew, and every way as promising as they were the previous year; but during the month of June there fell but three-fourths of an inch of rain, in July but 2.3 inches, and in August but 1 inch. The leaves on the vines ripened and shed off, leaving the green bunches of fruit exposed naked to the sun. They wilted, dried, and fell, without ripening. It must be remarked, that the culture of the vine was a new thing with me, that I had never seen any but my own, and that these vines were but five years from the slips. It may be, that as the vines get older, and only the same extent of limbs being allowed to older roots, they may become better able to sustain a drought. But the benefit of irrigation to any growing crop, in a dry season, to which our climate is peculiarly liable, must be important.

N. D. SMITH.

For the Farmers' Register.

#### RANGE OF THE THERMOMETER, AND STATE OF THE WEATHER, AT WASHINGTON, ARK., THROUGH 1840. NOTED BY N. D. SMITH.

MONTH.	Extreme range of temperature.	Quantity of rain in inches.	Fair days.	Cloudy days.
January	18 to 60	7.5	14	17
Feb'y.	10 to 76	14.5	12	17
March	31 to 75	8.5	17	14
April	44 to 80	12.62	7	23
May	46 to 85	5.63	22	9
June	56 to 92	.75	22	8
July	59 to 90	2.375	16	15
August	54 to 93	1.	23	8
Septem.	43 to 84	2.625	21	9
October	30 to 83	7.75	18	13
Novem.	18 to 72	3.75	22	8
Decem.	24 to 72	2.625	17	14



## THE CLIMATE OF AMERICA.

From the Farmers' Cabinet.

**Mr. Editor**—The late Mr. George Walker, of Holmesburg, observed to a friend, that after eighteen years' residence in this country—during which he had never lost a turnip crop—he could not be induced to return to England to battle with the elements. His estimate of the value of an American climate to the grain and stock farmer was high indeed, the Indian summer affording ample opportunity to raise turnips to any extent, after full crops of grain had been carried and safely housed—an almost incalculable advantage; and I have often seen on his farm a heavy crop of turnips, after the same land had yielded a crop of the finest and brightest wheat, amounting to forty bushels per acre. Now if the value of two such crops be joined to the advantage of feeding stock on the turnips during winter, with the straw of the wheat crop as bedding for the stock, and an estimate of the whole be drawn, with no drawback in the shape of tithe, tax, or poor rate, and about half a dozen other "rates," his conviction, that his farming operations were conducted in this country 25 per cent. cheaper than in England, was no doubt well-founded.

I well remember seeing the last of the crops—horse beans—carried one year on the 24th day of December! and this, too, was in the Isle of Wight, the garden of England; while I myself have had a crop of oats covered by two feet of snow while lying in the field. And I have now before me a retrospect of the year 1836, Scotland, where it is said "the prevalence of cold, frosty, ungenial nights, during the months of May and June, endangered the vegetative powers of all growing grain; and then was predicted, what has since unfortunately been verified, a serious deficiency in the crops; the backwardness of the season and the retarded period of harvest having a most deteriorating influence on the quality as well as quantity of the grain, occasioned by the raw, wet and boisterous weather of the month of August, with chilling blasts from the east and northeast," leaving only the month of July for the season of ripening the grain! No wonder that the observation follows: "The wheat has proved coarse, thin, and irregular, having ripened irregularly, and been cut, in some instances, partly matured and partly green, having also been hurried from the field, by which its condition has been much impaired."

The contemplation of such a picture is calculated to do us good; and by it I think we shall be able to understand how it is possible that the management of a well-cultivated farm can be conducted at an expense 25 per cent. lower in this country than in Great Britain, leaving an immense amount of ease and comfort in favor of the American farmer.

JOHN GREEN.

## FERMENTED MANURE.

From the Farmers' Cabinet.

**Mr. Editor** :—I lay it down as an axiom, "that need not be controverted," 1st, That no animal or vegetable matter can, properly speaking, operate as *manure* to vegetable life, until

after fermentation. 2d. That no animal or vegetable substance can, with impunity, be taken into circulation by living plants after putrid fermentation has taken place. To its destructive properties is to be attributed the death of the orchard of cherry-trees in Kent, as mentioned in a late number of the Cabinet,—the large quantity of stable manure which had been deposited in the trench, at a depth which prevented the escape of the deleterious gases on fermentation, became in consequence *putrid*; and when the roots of these trees had reached and penetrated this substance, and had taken up the poison into circulation, death was the immediate consequence.

I once carried abroad a large quantity of stable manure that had been long lying in a watery hole, until it had become quite putrid; and although it was spread as a top dressing on pasture land, but little benefit was ever known to arise from the application. A friend who keeps a large livery stable adjoining his land, dug a cistern to receive the drainage of his yard, in which there is always a large accumulation of manure, and kept a cart and caek to carry it abroad on his pasture and meadow land; but he found no benefit from it when it was allowed to remain in the cistern until putrid fermentation had taken place, and the liquid matter had begun to smell disgustingly, as he termed it. Another person, aware of the circumstance, has adopted a different mode to very great advantage: at the emptying of the cistern, he deposits in it a quantity of the finest mould he can obtain, and as soon as it is well saturated with the drainings of the yard, other mould is added periodically, until the cistern is full; it is then removed to some dry spot, and made into a neat heap, and after turning it up to induce a regular fermentation, it is carried as a top-dressing to his meadows, and especially on clover, in the spring, where the effect is absolutely incalculable.

Darby, April 16, 1841.

P. G.

## THE ROTATION OF OATS AND TOBACCO, BOTH PROFITABLE AND MELIORATING.

To the Editor of the Farmers' Register.

When we met last, I think, the general complaint of the failure of the crop of wheat in eastern and middle Virginia was the subject of our conversation. I had then but recently met several gentlemen of high agricultural reputation, who were anxious in their inquiries about the culture of tobacco, with which they had heretofore no acquaintance. In a brief and interrupted conversation there was little opportunity to explain fully a plan for the rearing of tobacco which I had before recommended in your Register, and which farther experience has convinced me is highly judicious, if not indispensably necessary, in the present state of our lands. With a view to benefit these gentlemen, I propose to recommend again this plan through the medium of your paper. The general opinion that our country, from the mountains to the seaboard, owes its devastation to the culture of tobacco, I shall not pretend to controvert, whilst I assert that the crop is, nevertheless, not particularly exhausting. The same system pursued in any new, wooded country, capa-

ble of producing a rich staple, and where labor is attainable, will produce the same results, whatever may be the crop. We witness this in the southwest, where cotton is made exclusively for sale; in Louisiana, where sugar is the crop; and in most of the West India islands. Even in Kentucky, so favorable to the grasses, there are not wanting instances to show how certainly even the best lands will be exhausted, without proper care and attention.

However this may be, it seems now a matter beyond a doubt, that we must make tobacco in a certain region of Virginia, or we must have no income. Wheat, (all agree,) cannot be relied upon. Our soil is too much exhausted, and the climate too arid, for grazing. For horticultural productions we have no market, and we are north of the cotton region. Tobacco has been a source of annual wealth in times past—is so now in a portion of the state, and, in my opinion, may be profitably cultivated again wherever it has been so in former days. Some one, curious on such subjects, has said, "that if you will draw a line through Raleigh in North Carolina, from the Atlantic to the Mississippi, and another parallel to it through Fredericksburg in Virginia, to the same river, you will include the best tobacco growing region." I believe that is true. It is certainly true that those lines include a country unfit (in general) for any other staple crop, (since the acknowledged failure of wheat,) and one where any improvement in the culture of tobacco, which will preserve the land and secure a good crop, ought to be most eagerly sought after. The plan I propose is so simple, that many will be deterred from trying it by that fact. It is to lay apart two lots of a size adequate to your force and other circumstances, and cultivate them alternately in oats and tobacco, rolling down the oats when *perfectly ripe* and leaving them on the land. A judicious manager will certainly make these lots rich to begin with, otherwise he can expect no crop of tobacco for a few years; for although, I believe, in a series of years land may be made rich by this system, even if originally poor, yet no one would be willing to give up two, three or more crops whilst it was becoming so. He will likewise select, (if possible,) land that lies well, to guard against the washing rains, and of course would choose low-lands not subject to inundation, if he had such. In addition to the decided annual improvement of land thus used, there are other advantages, any of which should induce every planter to try the plan. Your manure, withdrawn from your tobacco crop, may be applied to the improvement of the rest of the farm. The field on which oats is rolled down is put in finer tilth—better suited for tobacco to stand well, and grow off in, than by any process I have seen. Your fields are permanent, and therefore your tobacco houses may be made so, instead of being scattered all about the plantation wherever you may chance to make a little tobacco; and, lastly, there is less labor in the cultivation than on common lots or new land. Some tobacco growers believe they receive but small compensation for their labors unless they make a pound for every three plants. This is certainly a very good crop; but I have known it made more than once, and by one gentleman very commonly. The system of alternating oats and tobacco will insure this product in any year, (if your lots be well select-

ed,) after a few crops of oats have been rolled down. Every man at all versed in the cultivation of the earth will readily perceive that ploughing in the oats and sowing peas would probably hasten the fertilization of the lot. I have not tried it, because at the season when oats are ripe we generally are pushed for time—and rolling down has answered a good purpose, and is quickly done. I had intended to add a few words describing the mode of cultivating tobacco most approved about here; but, perceiving the last numbers of your Register to contain two essays on that subject, the one from Maryland, the other from Kentucky—both of which are obviously unsuited to us, I will not doubt that some one much better qualified than myself will at least adapt the above essays to our country and climate. You will understand that I am not vain enough to pretend to instruct veteran tobacco growers. My object is to aid some few especial acquaintances who are just about to commence the culture of this plant, and with whom I have already had some conversation.

H. M.

[We are gratified to meet again, as a contributor to the Farmers' Register, after a long interval of silence, our personal acquaintance and friend, the writer of the above communication. As interesting as it is, and valuable for the novelty, (to most persons,) and simplicity and cheapness of the mode of improvement which it recommends, it would have been more useful, and had more weight, if, instead of being anonymous, it had been signed by the name of the writer. We should also have been pleased, and so would hundreds of those who will be readers of the communication, if he had been more full in statements of experienced results of the plan of culture proposed. We trust he will continue, and enlarge upon this interesting subject hereafter. In the mean time, we will copy below a paragraph from the Farmers' Register, vol. 1 (p. 441,) which was referred to above, and which has not been seen by much the greater number of our present subscribers.—ED. F. R.]

"Mr. William Old, of Powhatan, has, for the last ten or twelve years, made as large crops of tobacco, (I mean for the quantity cultivated,) as any man in the state,—never or very rarely less than 1000 lbs. to the acre—sometimes a great deal more; and this too always commanding a high (relative) price. He has two lots for tobacco, one of which is planted every year, followed the next spring with oats, which, when ripe, are rolled down, or turned under with the plough, as he thinks best. This crop of oats not only supplies as much fertility as the tobacco may have exhausted, but the lots are becoming richer every year. On these lots he uses no manure; that is reserved for his corn and wheat. The cost of the seed oats is about fifty cents the acre. The labor of sowing and afterwards rolling down is very trifling—not equal to the expense of carting the manure on the lot if it was given to him. What I would principally call your attention to is the fact:—That the general character of his farm has

been more improved in the last ten years (whether you regard its appearance or its product,) than any other farm, save my friend Wm. Finney's, within my knowledge—during the whole of which time he has cultivated tobacco successfully. Nor are there any peculiar circumstances of a favorable character which apply to his farm and situation, more than to others. On the contrary, his predecessors were literally unable to support their families on the farm which he has thus improved. These are the facts on which I rely to prove the position, viz.: That the culture of tobacco is not incompatible with the improvement of the land; and I think they will be allowed fully to sustain it by all who will take the trouble to inspect Mr. Old's estate."

**SWEET-SCENTED VERNAL GRASS ON, POOR LAND. PROTECTION OF BUZZARDS.**

To the Editor of the Farmers' Register.

May 15th, 1841.

Dear sir:—It is too well known to all who live between our tide-water rivers, that we have a most distressing superabundance of very poor, thin, light land, incapable of producing any thing but broom-straw, hen-grass and sheep-sorrel; in a word—to borrow a common phrase—"land that was born poor." None will cultivate it so long as they have any thing which is even a shade better. The consequence is, that it is left uncultivated, and becomes a common for every body's stock, *not to fill their bellies on*, but to take a most wearisome march over in anxious search of a bite or two of some worthless weeds, growing slowly here and there, so far apart, like the stalks of much of our wheat, that, as I once heard a shrewd Yankee say, they are not near enough to be neighbors.

Now even to such land I believe I have accidentally ascertained that the sweet-scented vernal grass is well adapted. My reasons for thinking so are, that a few seeds of this grass, as I suppose, were carelessly thrown out of a box about two years ago, on a spot of ground near my house; and last year I discovered, to my great surprise, several bunches of it growing on another spot distant from the first a hundred yards or more, within the same inclosure. This land is very poor, thin and light; and I am quite sure would not produce a bushel and a half of corn to the acre. It has not been cultivated for two or three years, yet the sweet-scented vernal grass is spreading over it very fast, and even mixing to a considerable extent with other grasses which grow in adjacent and much better land. It is now in full bloom, and generally, as I have ascertained by actual measurement, full eighteen inches high, although in such poverty-stricken soil. It has a fibrous root, consisting of very numerous fine filaments, which take such strong hold of the land as to induce a belief that it would bear being grazed full as well as any grass yet known to us. This circumstance, added to its being the earliest of any of our cultivated grasses, and growing to the height above stated—where no other grass will scarcely grow at all, as well as furnishing herbage of which both horses and cattle appear very fond, recommends it, I think, strongly to our notice.

If the opinion I have formed of it be correct,

the owners of all such land as I have described, should lose no time in sowing it on them, for they would then soon have some good early grazing for their stock, where those poor, half-starved creatures now get nothing in the spring of the year, or barely enough to eke out a miserable existence; often at this season having scarcely sufficient flesh on their bones to furnish a meal for half a dozen hungry buzzards, which are not unfrequently seen, at such times, hovering over them, as much as to say to each other, (if birds could talk in these days,) "is it not near our time to take a snack of them?"

By the way, I have heard that in South Carolina there is a law which imposes a penalty of some 15 or 20 dollars on any one who kills one of these very useful scavengers. Although this argues well for their humanity to their buzzards, which I am told are nearly as tame as our turkeys, it has an awful squinting at something very different from humanity towards their poor helpless cattle, sheep and hogs. Still it shows a better spirit than prevails in some parts of our own state. For we not only often suffer these wretched animals to perish for want of food, but to die and rot even along our highways, and will not so much as encourage the breed of buzzards, to get rid of the nuisance without any trouble or cost to ourselves. *Quære*, might not our enlightened and beneficent legislature, which is always so profuse in professions of devotion to the great interest of agriculture, be tempted, in the exuberance of their zeal, to pass, if we would only petition them, just such a law as that of South Carolina for the protection of buzzards? A powerful recommendation of such a law would be, that it could not possibly cause the loss of an atom of popularity to those who passed it, as it would not take a single cent out of the treasury, and might bring something into it by way of fines. Those, I would respectfully propose, should be fixed at \$20 for every buzzard killed or crippled, which, considering the present state of our currency, would not be deemed too much. I would further propose—with all due deference to our legislative guardians—that the sum, which those fines would soon produce should be entitled "*The Buzzard Fund*;" and moreover, that it should be exclusively appropriated to pay the members of the Board of Agriculture, which our last assembly of law-makers so patriotically and generously established to serve *without pay*, and all "for honor and glory," just as if they themselves—every man of them—were perfectly willing to do the same, and doubted not for a moment, that eight competent gentlemen could be found any where to discharge the many arduous duties which the law imposes upon this board, and pay their own expenses besides.

But be this as it may, I hope our brother farmers and planters will meditate seriously upon these matters before the meeting of our next legislature, and act accordingly. I remain, dear sir, yours very sincerely,

JAMES M. GARNETT.

**ERRATUM.**

In the "Essay on Calcareous Earth," &c. published in the April number, there occurred an

unlucky error, by the transposition of the 12th, 13th and 14th lines, (as they there stand,) 2d col. p. 205. The order of these three lines, numbered as they now stand, should have been, after the 11th line, (and may be so corrected by placing the numbers opposite to them in the margin,) 13, 14, 12, when they will read thus:

"will amount to 612½ lbs.; and as lime can be brought to us at 75 cts. per hundred pounds, 612½ lbs. will cost \$4.59 the acre. I am not," &c.

This, and all similar errors of transposition, are made in the final correction, when, in correcting a single word in a line, two or three lines of types are taken out, and then, by carelessness, returned to a wrong place. The small error which had been marked, is found by the reviser of the press to have been properly corrected; but the much more important and newly made error of transposition of two adjacent lines thereby caused, may sometimes escape the notice of the most careful reviser.

#### COST AND RECEIPTS OF ALL THE PUBLIC WORKS OF PENNSYLVANIA.

From the Philadelphia National Gazette.

When a man's living exceeds his income, he is generally considered in the high road to beggary. A community from like causes must experience like effects. The State of Pennsylvania is on the high road to beggary. Or, what is worse, she has been spending more than her earnings, and has begged until her story has become stale, and no sensible person will give her a sou. The precious truth is just revealed, that all the public works of the state yield a less aggregate sum per annum under this present administration, than is required to use them and keep them in repair. In homely phrase, they cost more than they come to by about half a million of dollars a year.

#### Eastern Division Pennsylvania Canal.

Total cost,	\$1,734,658 61	
Total revenue,		1,047,826 08
Total expenditures,		422, 805 20

#### Juniata Division.

Total cost,	3,437,334 99	
Total revenue,		491,104 91
Total expenditures,		592,180 49

#### Western Division.

Total cost,	2,964 882 67	
Total revenue,		887,018 65
Total expenditures,		889,834 46

#### Delaware Division.

Total cost,	1,374,774 42	
Total revenue,		586,515 01
Total expenditures,		638,381 11

#### Susquehanna Division.

Total cost,	867,874 37	
Total revenue,		141,730 05
Total expenditures,		314,253 69

#### North Branch Division.

Total cost,	1,491,894 67	
Total revenue,		63,559 03
Total expenditures,		390,624 11

#### Western Branch Division

Total cost,	1,708,579 82	
Total revenue,		60,859 95
Total expenditures,		333,738 36

#### French Creek Division and Feeder.

Total cost (est'd.)	784,750 61	
Total revenue,		4,767 42
Total expenditures,		133,979 26

#### Beaver Division.

Total cost (est'd.)	522,258 98	
Total revenue,		10,924 02
Total expenditures,		139,082 21

#### Columbia and Philadelphia Railway.

Total cost,	3,983,302 05	
Total rev.—tolls	1,205, 419 91	
Motive power,	924,919 79	
		2,030,399 70
Total expend's—toll	585,343 88	
Motive power,	862,074 76	
Locomotive's ropes,	436,519 51	
		1,883,998 15

#### Allegheny Portage Railroad.

Total cost,	1,783,176 45	
Total rev.—tolls,	413,504 71	
Motive power,	443,480 29	
		856,985 00
Total expend's—tolls	293,135 40	
Motive power,	539,507 44	
Locom's ropes, &c.	122,266 92	
		954,879 76
Total cost of all finished lines,		20,658,791 64
Total revenue,		6,181,624 61
Total expenditure,		6,694,206 80

A glance at this table shows that not only do the public works afford no means of paying an interest upon the original outlay, or of providing as they should for a sinking fund to pay off that outlay, but that the daily use of them greatly exceeds in cost the daily income.

#### NEW AFRICAN FRUIT.

From the Year-Book of Facts.

Sir James Alexander, during his recent expedition in Africa, saw the *naras* growing on little knolls of sand; the bushes being four or five feet high, without leaves, with thorns on the light and dark green striped branches. The fruit has a coriaceous rind, rough with prickles, is twice the size of an orange, or fifteen or eighteen inches in circumference, and its seed and pulp resemble those of a melon. When unripe it burns the tongue and palate exceedingly, but when ripe it has a luscious, subacid taste. Sir James brought home some seeds of this fruit; from which plants were growing in March last: they were then a foot high, and beginning to branch, having two thorns at each articulation, and a stipule scarcely to be called a leaf between them, on the axis of which was the bud, but no leaves.

## CULTURE OF TEA IN EUROPE.

From the same.

In a letter from the Abbé Voisin to M. Stanislas Julien is a statement, which proves that the tea-tree may be cultivated in our northern climates. The former has resided twelve years in China, near the frontiers of Thibet, in which country all the species of tea are successfully cultivated; although the degree of cold there much exceeds that of our winters, and the snow never melts before the end of April. Twenty-four treatises concerning tea have been composed in China, from the seventh century to the present time, and which contain all the requisite instructions for the culture and preparation of the plant.—*Athenæum*.

(Of the practicability of the growth of tea in Europe there has long been no doubt; indeed, the experiment has been made with success in Wales. The only doubt lies in the secret of its preparation.—*Ed.*)

In no country of Europe is tea imported in such perfection as in Russia. Conveyed by land through the medium of the large fairs at Ladak and Nijn Novgorod, it retains the virtue of which a sea-voyage is said to deprive it; while its flavor is much enhanced by the leaves of the *olea fragrans*, with which the Chinese pack it for a land journey.—*Elliott's Travels*.

## EGYPTIAN COTTON CULTIVATED IN MISSISSIPPI.

To the Editor of the Farmers' Register.

Some time since I promised to give you the results of some experiments, I was then making with the Egyptian cotton. I was induced to make this promise from the fact of the appearance in your Register, in November 1838, of some premature remarks upon this subject, extracted from the Rodney Telegraph, calculated to produce, I much feared, in the minds of your readers, erroneous opinions respecting this cotton. I was absent from home at the time this was written, and Dr. New was urged to do it by the earnest solicitations of the editors of our village paper. I regretted this publication in your Register the more, in consequence of the fear of being charged with attempting to impose another humbug upon the community, and this being but to herald its fame prior to entering the seed into market. Let me assure you, sir, there is scarcely any thing I so much detest, and I hope it may not appear superfluous for me here to add, that I have never sold a single seed of it, and that I have never refused giving them to all who have desired to attempt the same results I had in view myself; that is, to improve, or at least to revive, the former character of our Mexican cotton. How far I have succeeded in this design is my present object to explain, and to do this it will be necessary to go back to the first year this cotton was introduced upon this place, in order to trace its changes from its original character to its present mixed varieties.

Whilst my father, Dr. Rush Nutt, was making a tour in the East during the year 1834, he procured among other things a handful of cotton seed in Egypt; of these there were two kinds, a

small white seed, and smooth black seed. These black seed he represented as having been introduced into Egypt from our Sea Island. That the stalks from these seed in Egypt only grew three or four feet high; in this particular, and in this only, differing from the character it assumes in our Sea Islands. This change he ascribed to its being cultivated for a succession of years in the extremely dry climate of Egypt.

In the spring of 1836 I planted these seed; from them succeeded in getting only one stalk of the black seed to grow, the white having rotted in the ground; the latter was also the fate with some others with whom my father had shared the seed. Being in a very rich bottom, this single stalk of the black seed grew about six feet high, with large heavy branches. It was late in blooming, and in September it was covered with young bolls and squares, but among the whole not more than half a dozen matured. The bolls were small, and contained only three chambers, the same as in Egypt, the cotton presented its usual richness of color, and the same length and beauty of staple or fibre.

The following spring I planted the seed from this stock upon the hills, supposing it would here come to maturity earlier, and contiguous to our Mexican cotton, in order to see if by approximation it would derive any improvement or new properties from the Mexican. I first observed a great variety in the size of the stalks from these seed, and then in the size of the bolls. Some two or three of the stalks grew as high as 10 or 12 feet, bearing much larger bolls, but fewer in number, than the preceding year, and a few only of these bolls contained four compartments or chambers. These stalks produced much the most beautiful cotton of the whole. The remainder, the greater part of the stalks, did not grow more than three and four feet in the same soil, bolls and squares were more numerous, but small. I could not account for this difference in any other manner than by supposing that the blossoms of these large plants had received some of the farina from the blossoms of the contiguous Mexican cotton, which amalgamation of fructifying principles had invigorated the plant and caused the product to assume somewhat more of the Mexican character. How this change of product might have taken place I can readily conceive, but by what law of vegetable physiology it caused the plant itself to spring up so much higher. I am at a loss to say, particularly as this growth had generally taken place before it bloomed; and I must leave it to wiser heads than mine to offer an explanation of this phenomenon of nature.

These seeds were carefully saved, and the next spring, that of 1838, I planted from them about an acre of ground, again in the hills. This season I marked no changes from that of the last. Some few stalks grew, as before, very tall, with fewer and larger bolls, whilst the greater part were small, with small bolls, and a great many squares that never came to maturity.

These seeds were also saved; and now having a sufficient quantity to venture experiments in another form, and being pretty well satisfied that we could never succeed in making it a valuable plant in its original unmixed state, I determined in the spring of 1839 to plant the seed with the Mexican, a row of each alternately. This was

cultivated carefully and closely observed during the whole year. You must bear in mind that the season proved to be an exceedingly dry one, and in every respect one of the most propitious ones for every description of the cotton plant that we have ever known. I believe there was nothing particularly to be marked in its growth until September, except the great variety in the size of the stalk. We observed, however, that it suffered less from the drought in May, June and July than our Mexican generally did; always looked more fresh and green, continued to grow, and lost but few of its squares, whilst the rest of our crop lost a great many. These remarks will apply to the Mexican rows as well as the Egyptian. I might here state also that the Egyptian cotton, since we first planted it, has always appeared to be less easily injured by frost. These advantages it no doubt partially derived from its becoming a more hardy plant in the dry atmosphere of Egypt, and perhaps also from being invigorated from amalgamation with another variety, that of the Mexican. Cotton generally was much more forward that season than usual; and we commenced picking as early as the 25th of July. The Egyptian cotton, usually so backward, was almost as early in maturing its bolls, but principally such stalks as appeared to be unchanged by mixing with the Mexican. The rest however was also comparatively early. And now, sir, were exhibited most of the interesting phenomena which I have to relate respecting our Egyptian cotton. As before mentioned, some few stalks sprung up to a considerable height, produced but few bolls, some of them not even a single form or bloom. The cotton from these stalks was a most beautiful article, *soft, fine and silky*; fibre very long and strong; but not so rich a cream color as the original Egyptian; invariably contained a *large green seed*. Other stalks did not grow so large, but had more branches; bore many more bolls, produced a long strong fibre, but not so silky; contained almost every variety of seed; upon some we found the original *smooth black seed*, upon others, seed a little fuzzy. Others again with a small brown seed, and some with a white seed. Many of the blossoms too changed from the Egyptian buff color to the Mexican white. Some of these stalks produced remarkably well, but I cannot say positively which variety of seed produced the most; but this was very certain, that the green seed yielded the smallest quantity, and produced decidedly the most lovely cotton, resembling in every respect in seed and cotton the *Chinese silk cotton*, which has latterly attracted so much attention in this section of country, and which I am inclined to think will prove the same. Think not that the difference in the height of this green seed cotton was owing to a difference in soil; it was all the same; and generally we would find one single stalk of this 8 or 10 feet high, with others on each side only three feet. The foregoing remarks apply principally to the cotton grown from the Egyptian rows; and which I have termed the *Mexico-Egyptian cotton*. That in the other alternate rows I have designated, in contradistinction, *Egyptio-Mexican*. Let us now turn to this: although perhaps it did not present so many interesting points to the naturalist, yet it offered more pleasing prospects to the planter. In this

we observed an evident and *decided general improvement*, both as respects the *life and vigor* of the plant, the *quality* of the cotton, and the *quantity* yielded. The bolls grew larger, the fibre somewhat larger, and much stronger. Nor was the plant so liable to disease, *consequently less attacked by worms and insects*. It grew rapidly and matured early, and, in fine, gratified my highest expectations.

These seeds were carefully saved, that is, of the *Egyptio-Mexican*, and the next season, in the spring of 1840, I planted from them about twenty acres, which yielded much better than any other part of the plantation, although the soil was rather inferior to some of the rest. The cotton too was so much superior that each bale was selected from our other cotton in New Orleans, and classed at a higher rate. I am so well satisfied of the superiority of the cross, that I have this season planted nearly the whole of my crop with it, and would have planted the whole had I had the seed. I have also planted in such a manner as to produce a little greater mixture of the two cottons, and may, perhaps, at some other time, give you the result of further experience upon this as well as other varieties of the cotton plant, some of which I have already tried without any good results. This is a subject of deep interest to our southern country; and I wish you could draw forth for the public good the experience of many of our practical and intelligent planters, induce them to take a pride in the matter, as the Kentuckian does with his stock, and the Virginian with agriculture in general. I have perused with much pleasure the remarks of Gov. McDuffie, of South Carolina, contained in the February number of your Register, upon this subject, and subscribe to them most heartily. There is no doubt his advice, if followed by all, would prove of incalculable benefit to the cotton-growing region; adopt a system of general improvement; improve our cotton plant, by crosses, and by such a system of cultivation and manuring of lands as will have the effect of producing a healthy stand of growing plants; gather our crop cleanly, and send it to market in a better condition; make less of it, and thereby enhance its value; attend to other products and improvements, and we would soon find ourselves richly repaid. I can give my testimony to this. We have pursued this course for many years; it always having been the ruling principle with my father whilst living, to do nothing except what he did well; consequently our crop is always sought for, its brand being well known among the manufacturers; and it never fails to bring two cents more per pound than other cottons. There are also one or two other brands that go to New Orleans, that command generally as good a price, and attributable to the same cause. We do not make as much per hand in bales; but as much in the proceeds after our sales. Our planters themselves should become interested, and no longer trust so entirely to overseers, an irresponsible and uninterested class, whose sole object is either to lounge about in indolence and cheat their employers, or in making as many cotton bales as possible, at the expense of almost every thing else.

I have above alluded to the *Chinese silk cotton*, as it is termed, and expressed a doubt of its being any thing more than the green seed variety of the *Mexico-Egyptian cotton*, although it is represent-

ed as a very different article in one important respect, the quantity of its yield. My suspicions may be wrong; but such, I think, will prove to be the case. It is said, by those who grew it last season, that it produces about three times as much per acre as the Mexican. It is this property of it which I am disposed to doubt, and upon this ground, that I believe, as a general rule, we will find it to be the case, that, in proportion as we find cotton possessing a long, fine and silky fibre, in an equal proportion will it be found to decrease in the quantity produced; and I think, upon an investigation of the matter, this will be found one of the characteristics of the cotton plant: that those varieties of cotton which are shortest in fibre will yield most abundantly, and the reverse. I admit, however, this may in some measure be varied, by a judicious system in crossing different varieties, and of cultivation. We all know that cultivation does a great deal towards changing and improving natural properties of vegetation in general; but I cannot believe that such cotton as I have seen exhibited as the Chinese silk cotton can ever be grown in such quantities per acre as our Mexican. I shall, however, be able to test the matter this year, having some of it now growing in our garden.

I have also made some experiments with the *twin or Okra cotton*, but abandoned it, as inferior to our Mexican in almost every respect; but the most serious objection was, that it appeared to open all at once, and wasted a great deal before we could be able to pick it; that is, if we had planted it as a crop. This is owing to its having so few and so short branches. All the bolls grew at one time, and opened together. It also grows tall, and the bolls at the top bend it over to the ground.

I intended explaining more fully my views upon the general system of saving a crop and serving it up for market; to account for our cotton being better in color, fibre, &c., and clearer of trash and waste cotton, in cotton the fibre of which is cut by the saws in ginning, than the most of cotton which goes to New Orleans; and also to hint at some other points in the line of our planters; such as manuring our soils, to prevent the threatened exhaustion of our once highly esteemed Gulf Hills, &c.; but fear I have already extended my remarks to too great a length—I am sure much more than I designed doing when I commenced. But I shall now close, at least until I learn the fate of this, which I leave entirely to yourself. I assure you, sir, it is with very great reluctance I send you these remarks, and would feel more than recompensed if they would but serve to call more attention to the subject; and to elicit other contributions from this section of country to your valuable publication. Respectfully yours,

HALLER NUTT.

Laurel Hill, Jefferson County, Mi.  
April 25, 1841.

[We shall be glad to hear again from our correspondent, on this or any other subject.—ED.]

#### MONTHLY COMMERCIAL REPORT.

For the Farmers' Register.

The most interesting circumstance which has occurred for some time in the commercial world,

is the recent movement on the part of the British ministry for an amelioration of the corn laws—a subject which has long agitated the kingdom, and been the bone of contention between the aristocracy and the working classes. That it should now be introduced by the ministerial party is a proof of the increasing strength and influence of the manufacturing and laboring portion of the community. It is proposed that a regular and moderate duty shall be laid on grain, in place of the fluctuating one, which has rendered the trade so precarious, and caused the price of bread to be higher in England than in any other country. The agricultural and commercial interests of the United States will be greatly benefited by the change; and it is evidently the interest of Great Britain to obtain supplies from this country, which affords so large and increasing a market for her manufactures, in preference to procuring them from the continent of Europe, where she has generally to pay for them in gold and silver.

It is proposed to admit other articles of necessity on more liberal terms than heretofore, and we may hope that this is but the commencement of a system which may remove the shackles from commerce, not only in Great Britain, but universally; confining the operations of tariffs solely to objects of revenue, and allowing a free intercourse between all countries in all commodities. Our own country will not, we trust, be backward in promoting so desirable an object, both by negotiation and by legislation.

There has been scarcely any variation in the prices of the most important articles of foreign or domestic produce during the month. Cotton and tobacco maintain the prices last quoted; but the late accounts from Europe are unfavorable to both articles. The manufacturing interest there, as well as in this country, is much depressed; and the cotton spinners in England are working but four days in the week. At this rate, the deficiency of our last crop will not be felt, and prices must keep down for some time at least.

Shipments of flour will no doubt be made in anticipation of the change above mentioned, and a slight advance in this article has already taken place.

The necessaries of life were never lower than they have been here of late. Flour at \$4.50 to \$4.75; corn at 45 cents, (now 55 cents); bacon at 5 to 8 cents.

The meeting of Congress (next week) is looked forward to for some important changes affecting the currency and commerce of the country. X.

May 25th, 1841.

#### THE SEASON AND CROPS.

May 25th.

Throughout the spring, to the 20th of this month, in lower Virginia there has been a very unusual predominance of cold weather; and from Christmas to the same time, the quantity and frequency of rains have been not only remarkable, but unprecedented. Not only was there much time lost to all out-door farm labors, but the earth was scarcely ever dry enough to

be ploughed, even when the weather was good. All ploughing was very late; and the planting of many a crop of corn was not commenced until after the whole field is usually finished; and those persons who planted earlier fared worse, by the rotting of the seed, or by the spare and feeble growth of plants. We had begun to fear that no other than very bad crops, of every kind, could be possibly made. However, since the 20th, the weather has become oppressively warm, and dry, and has been relieved only by one welcome and heavy, but yet insufficient rain. The wheat had even before that time greatly improved, and now promises to bring a fair crop, where there has been no peculiar disaster and destruction: and corn has so much improved within a few days, that an average crop is no longer very improbable, if there should be a continuation of favorable weather. The chance for cotton near the northern limit of its culture is still worse than for corn. There were scarcely any oats sown, as but very little land was dry enough to plough or harrow, during all the time in which that grain could be advantageously sown.

We are informed that the wheat crop in the Valley of Virginia was unusually good, up to a recent time.—ED. F. R.

#### HOW TO ERADICATE THE BRAMBLE.

From the Western Farmer and Gardener.

I observe that a correspondent in your last number inquires how the blackberry bush may be destroyed. As I have encountered and eradicated some formidable patches, which existed on the lands which I have at different times added to my farm, I think I may venture to recommend to your correspondent an infallible prescription. Some time in the winter or spring cut them close to the ground, and repeat the operation the last of July. A few will appear the second year, be sure to cut them also the last of May, and the last of July. This *specific* is based upon the scientific principle, *that no tree, shrub or plant can long maintain the life of the root without the aid of the top*. The leaves, &c., are as indispensable to the long life of a vegetable, as lungs are to an animal.

The same plan will destroy the iron weed or devil-bit, which so much infests the blue grass pastures of Kentucky, and which some farmers have vainly endeavored to eradicate by cutting once a year for 30 years in succession. Such pests are not to be exterminated by cutting in the blossom, or in the moon, but by the dint of scratched hands and sweated faces. You may have remarked the freedom of my farm from them, though a scattered one here and there shows the propensity of the soil to produce them, and that my predecessors were *industrious enough to raise their own blackberries*. Yours, truly,

ROBT. W. SCOTT.

Franklin County, Ky., March 20, 1841.

#### SUMMARY OF NEWS.

Saturday May 1st, 1841.

There have been already exhibited several and strong evidences of an intention, by some of the most deeply involved states of this confederacy, to deny the validity of, and to refuse to pay their public debts, contracted within the last few years. Some time ago, Gov. McNutt boldly recommended this course to the legislature of Mississippi, (upon the ground of alleged fraud in the transaction,) in regard to the state bonds furnished to establish the great (swindling) Union Bank of that state. Since, the citizens of Bond county, Illinois, have held a public meeting, and resolved and published their determination not to consent to pay the bonds of that state. The Philadelphia Ledger says, "a similar meeting was held by the citizens of Montgomery county, Illinois, on the 13th inst. A committee was appointed, which reported in full upon the subject, and, fixing the aggregate debt at \$13,000,000, say this debt, divided among the individuals of the state, would be over \$30 per head for every man, woman and child in the state."—"With these growing public demonstrations of resistance of payment, and the reluctance manifested by legislatures to resort to taxation to pay state debts, we should not wonder to see them as greatly depressed as they are, nor evince surprise if they should go even lower. Our corrupt and swindling banking system has largely contributed thus to taint the public morals and to induce men to calmly look at this reckless violation of faith. Let those who aided in building it up and in maintaining it, now look upon the legitimate fruits of their labors, and learn to be wise."—These results are deplorable proofs of the rapid inroads that fraudulent banking, and its necessary accompaniment, fraudulent stock-jobbing, have already made upon the morals and moral sense both of states and individuals. But no matter how fraudulently these obligations of debt were obtained, or the money expended, (provided they are truly *debts of the state*,) nothing can justify a violation of public faith, as is proposed. It is to be feared that the pernicious example will spread.

A public meeting of merchants of New York, called for the purpose, have resolved to petition congress to establish a national bank. The advocates of a national bank, throughout the union, are numerous, and confident of success in obtaining a charter at the approaching extra session of congress. The measure is now for the first time acknowledged and insisted on as a *party measure*; and fifty avowed and open advocates for it can now be found as easily as *one* could have been found last summer. The conflict on this great question will be violent, and the issue all-important. Within the next nine months will be decided either the continued and more complete separation of bank and state, or a newly formed intimate union of them, indissoluble and for ever.

Many of the most able and influential of the southern men who will now support a national bank, are among those who have for many years loudly asserted the unconstitutionality of any such establishment. How can these new converts condemn any extent of constitutional means of prevention against the measure which may be exerted by those who *continue* to deem the bank unconstitutional?

"The Governor of Cuba has commenced a war against gamblers, and intends to drive them out of the island."

"The brig Troubadour, under Spanish colors, reported as belonging to Rosaline Kitan, of Bissau, (Africa,) with 239 slaves on board, from the coast, bound to Berbice, was wrecked about the 6th of Feb., on the Cayes Islands. All on board were saved, and arrived at Nassau—the vessel totally lost. The cap-



tain and crew took passage in a Spanish brig bound to Havana, then lying in port. The negroes were taken possession of by the authorities of the island."

The Great Western steam-ship arrived at New York, on the 24th, bringing English accounts to the 8th. No public news of importance.

The President steam-ship, from New-York, had not arrived in England, nor been heard of; and so great was the fear that it had been lost, that insurance had been effected, and that too some days before the sailing of the Great Western, as high as 25 per cent. premium.

The grand jury have found a true bill against Madame Restell, the advertising abortion-producer, for manslaughter. She awaits her trial in jail.

Drake, the murderer of a whole family in Southampton, Virginia, has been condemned to death.

It is understood that the Florida war has been renewed by the savages, and that the plan of purchasing their consent to emigrate, for the greater number, has failed.

The swindling member of congress, Mitchell, had put his pursuers on a false scent, and gone to Canada. He was arrested in Montreal, but, like most other of the aristocratic class of swindlers, was discharged because of want of power in the law to punish.

The Church Record, (edited by Dr. Hawks,) is stating and commenting on some of the "business operations" of Mr. Biddle, (former president,) Mr. Cowperthwaite (late cashier) and other main conductors of the United States Bank, makes the following true and well applied remarks:

"The all-absorbing topic in our community, for some days past, has been the appalling disclosures of the long smothered misdoings in the administration of the Bank of the United States. Deplorable as these violations of trust must be, in their effects, upon the numerous individuals who are pecuniary sufferers from them—upon our national character, for honor, and probity in business transactions, upon our credit throughout the commercial world—and upon the confidence of our own people in like institutions; they are infinitely more deplorable in the proofs they furnish, of want of principle, and a deadened moral sense among us, in relation to all such matters. If the statements in the report of the stockholders' committee are substantially correct, many of the charges against the officers of the bank are not to be considered as mere abuses of trust; they are criminal offences; which, in any other country but ours, would have subjected them to indictment for fraud."—"Who can reflect upon such conduct in men, holding the most important trusts connected with the business interests of this great commercial country, and enjoying the unlimited confidence of the public, without the deepest sorrow and humility, and the gloomiest fears. Does it not prove, that we have brought down our standard of moral integrity to the lowest point—that we have discarded the restraints of honesty, from our dealings with our fellow men, and the obligations of Christianity, from our codes of duty?"

A batch of successful frauds, by means of forged drafts, apparently from the Commercial Bank of New Orleans, have been lately perpetrated in rapid succession upon three or four different banks, to the amount of about \$70,000, much the greater part of which the drawer has secured and decamped with. Precisely similar operations were attempted, simultaneously, upon four or five other banks, for very large amounts, which barely failed of being as successful as the others. The *nomme de guerre* under which this operator first appeared was W. M. Parker, of London, with an *alias* for every other different draft. Unless, indeed, his letters of credit, or drafts, were really written in the Commercial Bank of New Orleans, by a conjuditor in high office and enjoying perfect confidence, the forgeries are so perfect as to seem almost miraculous. We expect to hear, in a day or two, that some officer of that bank, of the highest respectability, is on his way to Texas. At any rate, whether so aided or not, this Mr. Parker is certainly the Napoleon of swindlers, (at least of those so called,) and one of the most able, artful, and bold and cool operators, by means of

banking facilities, who has ever exhibited skill in financiering. What a lamentable misdirection and waste of great talent! The proper sphere of action for this man would have been the office of president, and ruling spirit, of some great bank. In such a commanding position, he would have had ample scope to exercise his great talents and strong propensities, for the benefit of the bank, and of himself also; and general applause, and high reputation, might have been his meed, instead of his character now acquired, and hazards incurred.

A statement of the condition of the Farmers' Bank of Virginia, (including all its branches,) which is manifestly 'official,' appeared in two of the Richmond papers of the 30th. It says that "the profits of the bank amount to a sum equal, within a small fraction, to 10 per cent. of the entire capital." This report is up to April 1, and we presume is for the 12 months preceding. Now, instead of the bank authorities thus boastfully exhibiting these large profits, made during a time of continued suspension of payments, they ought to be ashamed of them, as being the measure of unjust gain, made at the expense of, and by defrauding the holders of their notes, and other creditors. During all this time, and now, because of the refusal to pay them, the notes of this bank have been depreciated 4 to 5 per cent. Now if as much of the bank capital as yielded 4 of the 10 per cent. of profits, (or the excess above the legal interest, and the full, usual and fair profit of money capital,) had been used by the bank to buy specie, with which to pay its notes, and maintain specie payments, instead of reaping a profit from the discredit and depreciation of their notes, then the present statement would, it is true, have shown only 6 per cent. of profit; but it would also have shown a sense of honesty, moral and legal obligation, and of responsibility, and the proper results of all these, of which their actual statement "of 10 per cent. profits," shows a total deficiency. But what bank, if permitted, and backed by the government, will not continue to refuse to pay specie, and thus to violate faith, truth, and honesty, to any extent, to gain even so little as 4 per cent. of additional profit?

Saturday, May 8, 1841.

The banking house of the Branch Exchange Bank in Richmond, now in the course of construction, will be a splendid and beautiful edifice—and will remain one of the most durable and striking monuments of the sway of our plundering and prodigal banking system, long after the consummation of its approaching prostration and destruction. And yet, if looking not to the beauty, but to the object and use of this building, there is seen a strange and even ludicrous want of fitness of means to ends. There will be seen massive granite columns of enormous size and strength, which will have almost *nothing* of weight to sustain, or of service to perform; and while the whole amount of specie belonging to this bank is only sixty-three thousand dollars, a stronghold is built to keep it safe that will cost more than half that amount; and a sumptuous palace, whose beauty is merely to please the eye of the public, is erected by a corporation which exists only by pillaging and defrauding that same public, and which would be bankrupt (the *old* and true term for *suspending payment*) *avowedly*, as well as really, if the bank were not guarded by the dishonesty of the laws from being compelled to comply with its just and honest obligations to its creditors.

The Governor of Pennsylvania has opposed his veto, for the third time this session, to another bill passed by the legislature for relieving the banks—that is, to authorize the banks of Pennsylvania, like those of Virginia, to act free from all penalty or responsibility for their violation of their obligations under law, justice, and honesty. Another bill was immediately prepared and passed the lower house. We trust that it will fare no better than its predecessors.

All the public works, in canals, railways and roads, of Pennsylvania, which cost the state forty millions of dollars, together yield less annual income, by about half a million of dollars, than the annual expenses. This is "internal improvement," with a vengeance!

The repairs of damages to the Savannah and Macon Railway, caused by the recent unprecedented freshets, have been rigorously prosecuted, and are nearly completed, and the whole 135 miles of before finished road will soon be in use.

A horrible crime has been recently committed in St. Louis, Mo. Two young gentlemen, Baker and Weaver, attached to and lodged in the private bank-

ing house of Mr. Pettus, were murdered in the night, by persons who had secreted themselves in the building, for the purpose of robbery, and the house then set fire to conceal the murders. The main object of the murderers failed, as they were unable to break into the fire-proof iron safe, or vault, which contained \$200,000 worth of money and other valuable papers, and which were not injured by the fire, though the safe was exposed to a prodigious degree of heat. The villains have as yet escaped even suspicion. A reward of more than \$5000 is offered for their detection. This deplorable and horrible event has caused a profound sensation, and general commiseration for the lamented sufferers and their relatives.

"The explosion [of the United States Bank] has revealed the demoralization of banking, and the villany of human nature. The more we see of it, the more we are satisfied that banking has been reduced to a system of bribery, lying, false-swearing, and actual robbery of the poor and innocent. To say nothing of the thousand stockholders in both worlds, thus reduced to beggary, the famous Girard Fund is also annihilated, and the splendid Girard College will have to remain unfinished, a modern Parthenon in ruins, emblematic of the banking system, and the classic mausoleum to its memory and manes." "Certainly the United States Bank has been badly, dishonestly, and foolishly managed; but we do not believe there exists a bank throughout the country, that has been conducted on any other principles. *The inherent error is in the system.* It is a system of credulity, mystery, deception, fraud and roguery, from beginning to end. It corrupts the heart—it destroys all principle—and saps the foundation of all honesty in society. The United States Bank has not been a more marked fraud upon the world than any other bank—it is only greater in proportion to its capital. Nicholas Biddle is not a worse man than any other man in Wall street connected with, or administering a system that is concerned in swindling, sin, iniquity, mystery, and midnight robbery."

"The banking system will go down, and all those who hang upon it will soon be looked upon as fit inmates for the state prison. The misery and poverty which have overtaken the poor deluded stockholders of the United States Bank—men, women and children—will assuredly overtake the stockholders of every bank in this or any other country. The explosion of the English banking system will astonish the world one of these days. It will revolutionize that country—as our series of explosions since 1837 have revolutionized this country."—*N. Y. Herald.*

"The Governor of South Carolina has instructed the Attorney General of that state to institute legal proceedings against the banks that have refused compliance with the law amending their charters. Proceedings have accordingly been instituted by the Attorney General to vacate the charters of the recusant banks. These are the Bank of Charleston, the Bank of South Carolina, and the State Bank."

A person employed by the Camden (N. J.) Bank to convey money to Philadelphia has retained \$13,000.

McLeod has been brought in custody to the city of New York, upon a writ of *habeas corpus*.

The United States Bank has assigned property of the (nominal) value of 7 millions to trustees to secure the payment of debts due to other banks.

The people of Malloko, the island of the Fijee group, where Lieut. Underwood and Midshipman Henry, of the exploring squadron, were murdered, were attacked by the crews of the squadron, many killed, and the survivors reduced to complete submission.

"Fanny Elssler is said to have cleared upwards of \$65,000 by her visit to the south."

The Ocmulgee (Ga.) Bank "has suffered" a protest of its notes, and notice of the protest had been forwarded to the Governor. The effect of this intelligence has been a decline in the value of the notes of the bank, and further information is anxiously awaited."—*Charleston Pat.*

McLeod may be said to be at large in New York, being merely attended in his walks by the sheriff. It may therefore be perfectly well understood that his discharge, in some way or other, is a settled matter.

The New Orleans Bee mentions another case of "defalcation" in that city. A teller and a book-keeper of one of the banks had taken \$75,000, and had absconded.

"The Bank of Chillicothe, Ohio, with specie in its vaults, according to its published statements, of more than double the amount of its circulation, suspended specie payments on the 26th ult. Wherefore, then, the people will ask, does the bank refuse redeeming its notes, when its means so far exceed the demands that would be made by the note holders? The question is fully answered by the mention of the fact that the Fund Commissioners of the state have been authorized to borrow for furnishing the public works, *two and a half millions of dollars!* And that the Bank of Chillicothe has agreed to furnish of this loan, *five hundred and eighty one thousand dollars of their own paper!* Having been so very kind to the state, who would think of holding it culpable for a suspension? Besides, it is now in a fit condition to double the amount of the loan whenever the *interest* of the people may require it. The bank can now strengthen itself by selling one hundred and fifty thousand dollars of specie, at a premium of about *fifteen per cent.*, which will make the snug little sum of *twenty thousand five hundred dollars.* But this is only a little spice money. The interest of the loan (so called) at six per cent., would amount to *thirty-four thousand eight hundred and sixty dollars a year.* Who can fail to see the *great benefits* resulting to the community from such a magnanimous system of banking?"

*Important news by last night's mail.*—The last vetoed Pennsylvania bank-bill has been reconsidered, and passed by two-thirds of both houses, (May 4th,) and therefore is now the law. This astonishing result was produced by the sudden change, *at the last pinch*, of votes of a sufficient number of members who had before throughout, and up to the last moment, "*on principle*," opposed this bill, and all such measures. *Very powerful inducements must have been presented to these men to cause so sudden and radical a change of their position.* This monstrous law authorizes the continued suspension of specie-payments for five years, *expressly*; and, by certain consequence, though not expressly, the authorized suspension is made in fact perpetual. Perhaps it is all for the best, that the bankrupt banking system should thus be at once brought to its very worst extremes, and that too by the act of a bankrupt government, as that of Pennsylvania was, even before the passage of this ruinous law.

This measure will have most important consequences to Virginia, and indeed all the other states. Our bank men have pronounced, as an unquestionable truth, that whenever the Pennsylvania banks suspend payment, those of Virginia must suspend—and this doctrine has been heretofore acted upon by the banks, the legislature, and the submissive people, in all cases. *If it be true*, (which we altogether deny,) then the banks of Virginia now must also continue non-paying, for five years, or for ever; or rather, (and which will be in a much shorter time,) until the whole system shall sink in its own rottenness, or is wiped off from our laws and our country, because of the still increased iniquity and infamous procedure, which may now be expected to follow.

Saturday, May 15, 1841.

The Britannia steam-ship arrived at Boston on May 6th, bringing accounts 12 days later, and to April 20th, of which date we have received our English papers.

No news had been heard of the President steam-ship, and therefore there remains scarcely a possible chance that it has not been lost, with all on board.

From China the news is important. (Date from Macao, Jan. 27.) The British forces had attacked and taken two of the Bogue forts, and attacked and defeated the flotilla of junks. Considerable loss of lives to the Chinese, and scarcely any to the English. Hostilities were stopped in consequence of the announcement of *peace having been made*. By the terms, the British seem to have gained very little, and much dissatisfaction was felt and expressed. The British are to evacuate the island of Chusan and their other conquests, and to receive \$6,000,000 in six years as indemnity, (which the Chinese can raise by imposts on the British trade,) and the island of Hong Kong is surrendered in perpetuity to the British government. The direct official intercourse between the two governments to be on equal terms, and the trade of the port of Canton to be opened as formerly. The future opium trade left unsettled.

We have no doubt that the Chinese authorities consider and will treat this termination of the war as a victory on their part—and that by subsequent management they will make it so in results.

Great excitement prevailed in Philadelphia, amongst the anti-bank men, in consequence of the passage of the bank relief-bill. It was even thought that the persons of "the recreant members" would not be safe, if they were there. One of the features of that bill, and which no doubt greatly aided its passage, is a loan of three millions (*in irredeemable paper*, of course) to the state, by the banks, whose bankruptcy it was necessary thus to protect by law. This loan is to be carried out by the issue of that amount of small notes, which, as "bills of credit," are deemed by some unconstitutional, and an attempt will be made to arrest the operation of the law. Exchange on New York had risen in Philadelphia, from  $3\frac{1}{2}$  to 5 per cent., owing to this law, and the expectation of the increased issues of bank paper.

Of this relief law the Philadelphia Ledger speaks thus: "But the last, which has now become a law of the state, is the boldest, most barefaced, impudent specimen of legislative dishonesty of which we have ever heard; and we should not have believed, without witnessing it, that any legislative body, unless consisting of *discharged convicts*, would have had audacity enough for such an experiment upon the burden-bearing patience of the people."—And yet this law is, in effect, to bind Virginia to irredeemable and depreciated paper money, (as the bank-men here maintain,) as much and as long as it does Pennsylvania. We trust that neither Pennsylvania nor Virginia will long submit to this state of things.

Mitchell, the forger, and recent member of congress, has been again arrested in Canada.

The governor of Pennsylvania has pardoned Dr. Dyott, the celebrated banking swindler, and who is accordingly released from the penitentiary. We infer that Gov. Porter gave this pardon on the ground of the gross partiality of the case—Dr. Dyott being punished as a convicted felon, when Messrs. N. Biddle, Cowperthwaite, and sundry others, who have done much worse, escape unpunished—and when the legislature of Pennsylvania has, by its "bank relief law," just enacted, legalized bank-swindling on the broadest scale, and for an indefinite time.

The negroes condemned in Virginia for crimes, to be transported beyond the limits of the United States, have been heretofore regularly bought from the government, under those stipulations, and bonds given

for compliance, and then the negroes sold in Louisiana. We rejoice that one of these systematic violators of obligation has at last been caught in the act, and punished in part, in New Orleans, and we trust that the penalty of his bonds will be fully exacted by the governor of Virginia. Wm. H. Williams had bought, as above, 24 slave convicts, which he carried and sold in Louisiana. He has lost there the value of the slaves, and a fine of \$500 for each, and his bonds forfeited to this state will amount to \$24,000 more—a justly deserved lesson, which we hope will stop these offences hereafter.

The American squadron in the Mediterranean, under Com. Hull, set sail homeward, in 12 hours after receiving, from England, the recent reports of expected war between that country and the United States, and in consequence of that report; and the Brandywine frigate, which had separated from the others, has arrived alone at New York. This movement was, at least, *being on the alert*.

In Philadelphia efforts are making to push the claims of Commodore Stewart to the presidency. If military services alone, as seems likely, be hereafter counted as the best claims for the chief magistracy, then there is some alleviation of the evil that the field of selection shall be extended, by including the naval as well as the land service.

The National Intelligencer, which may be now considered as the organ of the administration, sums up as follows the measures expected to occupy the deliberations of the approaching extra session of congress:

1. The distribution of the proceeds of the sales of public lands among the several states.
2. A revision and augmentation of the duties on imports, for the purpose of securing from that source a revenue adequate to the wants of the government.
3. The repeal of the sub-treasury law.
4. The establishment of a fiscal agent, central or other, to aid the government in collecting and disbursing the revenue and equalizing the currency. [In plain English, a *national bank*.]
5. A temporary loan, if necessary, to supply the immediate necessities of the Treasury."

"*A Model Republic*.—Connecticut presents a republic which secures more good and avoids more evil than any other political community of ancient or modern times. All the public statutes, after two hundred years' legislation, are contained in a single volume; the annual expenses do not exceed \$80,000; the state owes nothing, possesses a school fund of more than \$2,000,000 well invested, yielding an annual income of \$113,000, is without disbursements or superintendence of public works, employs but few offices, and yet enjoys the security of law and the administration of justice as economically as any other state in the union."—*Nat. Int.*

The perpetrators of the recent horrible murders and arson at St. Louis, have been discovered. They were three free negroes, and a slave who was permitted to go at large, as if free. The slave (Madison) told the circumstances to another companion, (who has since, and much too tardily, given the information,) before the flames had burst out of the house. The murderers had all gone off, in different steamers, before being suspected; but two of them have since been arrested, and the others cannot long escape the hot pursuit. Their sole object was plunder, in which the villains entirely failed—having been unable to enter the iron chest, after being in complete possession of the house.

A plan is in progress for establishing an American line of steam-packets of the largest size, to sail between New York and England, and by arrangements expected to be made between the proprietors and our government, these vessels are to be converted to steam frigates, whenever war occurs. The National Intelligencer says, "that contracts for building two of the

steamers have been signed, and the building is about to be commenced at New York. The ships are to be 2,500 tons each, and 300 feet long. Each is to have two engines of 400 horse-power—equivalent to 1,040 horse-power by English computation. The two are to be finished in 18 months, and then the other two will be commenced.

The great steam frigate Mississippi, built by the government at Philadelphia, was lately launched.

A very destructive fire occurred at St. Louis on the 3d. Also a fire in New York, (of buildings erected on the formerly burnt district,) of which the loss is more than \$300,000.

The premium paid in Petersburg for exchange on New York has gradually risen from 4 to 5½ per cent., which is the present price. This is an indication of the growing depreciation of the paper money of our banks.

From January 1, 1841, to April 1, the outstanding debts of the Farmers' Bank of Virginia, (that is, the amount due from all borrowers,) was increased \$148,342 by the amount of new loans exceeding all payments of previous debts!!! In the same time its stock of specie was diminished by \$22,051. No wonder that the bank authorities can boast of having made net profits during that time at the rate of 10 per cent. per annum. *Query.* At this rate of "curtailing" its discounts, and of reducing its liabilities, when will this bank be able to resume specie payments?

It is given out and understood that the Bank of Virginia will declare a dividend in July. If so, we presume that it will be out of the capital stock. This has been a mode of sustaining the credit of many banks and other joint stock companies.

"We have been shown a fine specimen of coal, recently found in the neighborhood of Scotland Neck, Halifax County, which very much resembles the anthracite, and to all appearance would burn equally as well. There are indications, it is said, of an extensive coal formation where this specimen was found, which will, no doubt, be thoroughly explored."—*Raleigh (N. C.) Register.*

"The recent appalling overdrafts at the State Bank have excited an investigation at the Bank of Louisiana, by which it is found that about \$30,000, some say \$100,000 are found missing. The search was first induced by the Cashier, Mr. Leverich, when it was found that Mr. Collison, who is said to have been overdrawn \$20,000 at the State Bank, was the discount clerk at the Bank of Louisiana. We are not able to say if any discrepancy occurs in Mr. C.'s books, but it is certain that he and the receiving teller of the Bank of Louisiana have absconded. The latter has pocketed, it is stated, about \$30,000, received in two deposits on Friday and Saturday last."—*N. O. Crescent City.*

A report that the President steam-ship had gone to Madeira has been put in circulation, but on such very slight grounds of probability that we did not think it worth mentioning; and would not now, except that other papers, in publishing the report and its very insufficient grounds, express the opinion that "these facts seem to justify a belief that the steam-ship is safe."

*Saturday, May 22, 1841.*

Another, and the greatest outrage of the kind, has been committed, by a British cruiser on the brig A. E., of Baltimore. She was taken possession of by an armed boat's crew from the British brig of war Persian; and by the crew of the boat, and by the Persian, kept 19 days, during which time her cargo was ransacked, provisions consumed, and goods destroyed, without regard to the rights, or the papers, of the American vessel, and more like pirates, than naval officers of a friendly power. At last, after this detention and spoliation, the American vessel was released.

It is remarkable, that in all the sundry recent cases of unlawful search or capture, not one of the American vessels was found to be justly obnoxious to the suspicion which formed the pretext for the outrage. And, even if actually they had been slavers, that would be for our government to punish, and the British government has no right of search in any case, of American vessels. This course of outrage on our rights must be stopped.

The former province of Yucatan, which not long since threw off the connexion with Mexico, has formed a republican constitution and established a regular and independent government.

The Philadelphia Ledger of the 18th says—"The prospect of the payment of the interest due in July by the three states of Pennsylvania, Illinois and Indiana, is sufficiently doubtful. Mississippi and Florida of course cannot pay. In Pennsylvania, some of the banks of the interior have accepted the provisions of the relief bill, and already issued the small notes which it authorizes. The city banks have not accepted it, and probably will not; the Bank of Philadelphia has rejected it decidedly."—This "relief law" must be even worse than we had supposed, when the banks themselves reject the almost unlimited power which the law offers to them to defraud the public by irredeemable issues.

"Commodore T. Ap C. Jones has been appointed to the command of the Pacific squadron, and will hoist his flag on board the United States ship Independence."

"It is stated in the Charleston Patriot, as proving the honorable character of the merchants of that city, that the whole sum put in suit by the collector of that port, during a period of twenty-one years, is but twenty-nine dollars and seventeen cents."

Mitchell the forger, and late M. C., has been brought from Canada to the city of New York in irons, and committed to jail.

"Mississippi will not be represented at the extra session of Congress. Gov. McNutt has declined calling an extra session of the Legislature for the purpose of appointing a period for the election, and does not consider himself authorized to order an election without the intervention of the Legislature."—*Phil. Led.*

"Five Portuguese slavers, with upwards of one thousand slaves on board, were taken into St. Helena on the 26th of March, having been captured on the west coast of Africa, by the British naval force on that station."—*Id.*

"Mr. Barker, the cashier of the Branch Bank of the state of Georgia, is reported to have decamped with \$73,000 of the bank's money."

The Alabama legislature has passed an act sanctioning the suspension of payments indefinitely by the banks of that state.

The authorities of the branch Exchange Bank of Petersburg deserve to have credit for a most wonderful improvement in their execution, in the endorsing of their bank notes, (when compelled thus to make them bear interest,) since we reported the very remarkable manner in which they first performed this unpleasant requirement of the new law. In all the subsequent cases of demand by holders of their notes, the endorsements have been written (very differently from the first) quite legibly, and in good black ink, and moreover on the backs of the notes; and therefore required no printed label of explanation, or evidence of the obligation, as at the first essay. The authorities shall not want for enough practice to keep them up to this very commendable mark of improvement. We hope that every bank in Virginia will be compelled thus to mark their own dishonoring of their

notes; and, small as is the pecuniary penalty thus imposed, if many anti-bank farmers would enforce it, every such endorsed note which they would carry home would be a striking exposure of, and both a standing and a current argument against the continued sufferance of a rotten and irresponsible banking system. but the more outrageous the course of the banks, in all matters of violation of legal or moral obligation, and even of regard to common decency of conduct, the better we shall be pleased. We fully believe that it is only by the full and complete exposure by the banks themselves of the fraudulent principles and iniquity of the existing banking system, that the people can be roused to its destruction. The banks have certainly been given "rope enough to hang themselves," both by the laws and the toleration of the cheated and pillaged people; and we rejoice that they are using their ample privileges in the surest manner for their own destruction.

At an adjourned meeting of the stockholders of the United States Bank, resolutions strongly condemnatory of the former administration of the bank, and implying the expenditure of immense sums for purposes of corruption, were offered by Mr. Duane, and adopted by the meeting. From the supplementary report to the meeting, of the committee of investigation, it appears that more than a million of dollars had been spent and are unaccounted for—the vouchers having been passed without being read, and then burnt!!! The United States Bank has accepted the benefit of the "relief law."

A writer in a Richmond paper of the 20th, in reference to the bank notes of \$1 and \$2, (which only the banks are now compelled to pay,) complains bitterly that some holders of such notes "have claimed their legal right, and demanded specie to the amount of several hundred dollars at one time, sticking for the pound of flesh nearest the heart, to the last. *That the avaricious appetite of man should be so keen, is humiliating,*" &c.—and then the writer (no doubt a bank debtor, or a bank officer,) goes on to threaten that the banks hereafter "will be very cautious in their issues" of small notes, if thus compelled to pay them. What a monstrous perversion of language and ridiculous misapplication of terms, as to the *cheating banks* and the *cheated note-holders and creditors* of the banks! How much must the moral sense and intellect of a community have been poisoned by being *bank-drugged*, if such representations as this receive any respect or countenance!! And how *miserably weak*, and yet *reckless and desperate* must be the banks that can make such an appeal as this to public prejudice and favor, to shield them from paying a few hundred \$1 and \$2 notes!!!

*By mails of last night.*—The legislature of New York have passed an act appropriating \$3,000,000 to three canals, of which, \$2,150,000 is directed to enlarging the Erie canal.

The Rochester arrived from England at New York on the 19th, bringing accounts two days later. No news of the President steam-ship. No other accounts yet published.

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# THE FARMERS' REGISTER.

VOL. IX.

JUNE 30, 1841.

No. 6.

EDMUND RUFFIN, EDITOR AND PROPRIETOR.

## ON DAIRY MANAGEMENT.

From the Transactions of the Essex (Mass.) Agricultural Society.

To J. W. Proctor, esq.—Sir—Having been unable to attend the meeting of the board of trustees in December, I submit the following considerations relating to the management of dairies.

The first and most essential point to be gained is to procure good cows. It costs no more to feed a good cow, than a poor one. And the comparative result of their produce at the close of the year, makes a most essential difference in the profits of the farmer. Suppose one cow to give one quart at a milking, or two quarts per day, more than another, the milk being of equal quality; and this milk to be estimated worth two and a half cents per quart, and this to continue 200 days—here would be a difference of *ten dollars* in the produce of the two cows. This rule applied to a dairy of fifteen cows, would be equal the sum of \$150—half as much as the net annual income of a majority of the farmers in the county.

The *quality of the milk* is a consideration not less important than the quantity. Those who never have tried the experiment of setting different cows' milk separate, have very imperfect ideas of their comparative value. I have known some cows that five or six quarts of their milk would raise cream sufficient to make a pound of butter. I believe this was stated to be true of the Oakes cow, from the milk of which was made twenty pounds of butter a week for several successive weeks; and I have heard the same of others. But, ordinarily, it takes ten quarts of milk to yield a pound of butter. It therefore becomes a point of great importance, in selecting cows for the making of butter, to obtain those whose milk is adapted to this purpose.

The *manner of feeding cows* is a point not to be neglected, in the management of a dairy. Good feed not only increases the quantity of the milk, but it improves the quality; and of consequence the butter and cheese produced therefrom are better also. The *kind of food used* is also to be regarded. Every dairy-woman knows that the milk will indicate the kind of food used; therefore those kinds of food which leave the best flavor in the milk should be selected. When cows have been fed on cabbages or on turnips, who has not tasted the peculiarities of these vegetables? When they are fed on Indian meal, on carrots, or on beets,—it is fair to presume that these articles become incorporated with the milk also. I do not presume to say which of these articles is the most valuable to be cultivated for the feeding of cows; though I hope in this age of experiments, with so many inducements as are now held out for the trial, it will not be long before some of our farmers will give us satisfactory information on this subject.

The *manner of milking* also demands attention. Cows should be milked about the same time each day; and they should be milked *quick and clean*. If a portion of their milk is suffered to remain, this

will soon diminish the quantity, and the cows will dry up. It is bad policy to trust milking to children, for they usually do it moderately and imperfectly, and more is lost thereby than would pay the best of laborers.

The *place for the setting of the milk*, is also worthy of attention. This should be cool, well ventilated, and exclusively appropriated to this purpose. For if it is permitted to be occupied in part for other purposes, some things will find their way there which will be injurious to the milk. It should also be properly lighted. Cream will rise more favorably in a light than in a dark room, and the quality of it will be better. Therefore a dairy room above ground is preferable to a cellar. The room should be carefully guarded, by the use of wire gauze, or some other substance at the windows, against the approach of insects or intruders of every kind. The milk should be set in pans uncovered; as the cream will not rise so freely when there is a cover over the pans. Care should be taken not to fill the pans full, especially in warm weather, as the cream will rise quicker and better when the milk is spread over a larger surface. The sooner it rises and is removed from the milk the better; and this should always be done before the milk begins to turn sour. When the cream is taken off, it should be kept in tight covered vessels, in cool places, until the churning process; and this should always be before any sourness or mould is discoverable.

Much care should be taken to separate the butter-milk thoroughly from the butter. More depends on this than any other part of the process in making good butter. Unless this is done, it will be impossible to preserve it sweet and good. If our dairy-women would apply double the labor to half the quantity of their butter, and thereby thoroughly remove all particles of butter-milk, this one half would be worth more than the whole in the condition it is usually sent to the market. As this is a matter that interests every farmer, and every lover of good butter, (and who does not love it when it is fair and nice?) I have presumed to forward these remarks. You will use them as you think proper. JOSEPH HOW.

Methuen, Jan. 6, 1841.

*Note.*—What I have said in relation to the working of butter, is to be understood in relation to such butter as had the proper previous management. For if the butter comes salt, it may be worked ever so long, and not become hard and good; although it may be improved by working. Butter that comes well will be fit for immediate use with very little working. But if it is to be kept, care should be taken that the buttermilk is thoroughly removed.

It was my intention to have said something on the feed of cows. But my remarks have already extended so far, I will simply say, that there is no feed on which cows can be kept, that will make better butter, than a first rate pasture; such as

abounds with English grasses. When this supply fails, let the deficiency be made up by green corn-stalks. Farmers will do well to plant some corn extra, for this purpose.

The present winter, I have boiled roots for my cows, such as turnips and sugar beets, to which I add a little Indian meal. This food, when properly prepared and seasoned with salt, is well received by the cows, and improves the flavor, and increases the quantity of their milk. J. H.

#### FISHERY LAWS OF PENNSYLVANIA AND THEIR EFFECTS.

[The law of fishing rights is the same in Virginia as in Pennsylvania, and the following statement is nearly as applicable to the former as to the latter state.—*Ed. F. R.*]

From the Public Ledger.

*Messrs. Editors*—My attention was attracted by an abstract of the laws regulating fisheries in the Delaware, published in your paper of the 10th instant, and I have been much astonished that public attention has not been called to this subject long before now. I well recollect when the average price of shad was not more than eight dollars per hundred; whereas, for several years last past, it has not been less than twenty; and on inquiry into the cause of this rise, I find it to be a general opinion that the vast extent to which the gilling system is carried on, has produced it. There are said to be a thousand or fifteen hundred drift nets or gilling seines in operation within the concurrent jurisdiction of this state and the state of New Jersey. These being spread in all directions in the river, it is almost impossible for a shad to pass up without coming in contact with some of them, and the same fish may probably be entangled a score of times or more in its progress; and being thus impeded, mutilated, and injured, would instinctively seek some other stream at the next spawning season, or perhaps deposit its ova in the salt water, where it must perish. Hence the scarcity of shad in our river, and the consequent high prices. Such was the case in Connecticut river, until laws were enacted by that state for the suppression of gill nets, and duly enforced, since which the shad have gradually returned, and are now as plenty as before. It is quite evident that a large portion of the shad that strike the gill nets struggle through and extricate themselves; and, indeed, this must be the case, or few if any would reach the upper Delaware; whereas the shore nets or sweeping seines take all they enclose, and remaining so short a time as they do in a fishing position, they give time and space for the passage of the shad; but the gilling nets, remaining many hours together in the water, form a complete barrier, except by a passage through them. The law, however, permits gill-net fishing under certain regulations, which, if observed, would necessarily so far restrict their number as to render them comparatively harmless; and as shore nets are restricted and regulated by law, and, I believe, universally kept within legal requirements, it is truly astonishing that gill-net fishing should be unrestrictedly tolerated, subversive, as it appears

to be, of the interests of the community, in driving the shad from our waters, as well as ruinous to the holders of shore fisheries, many of whom have invested their hard earnings in this species of property, on faith of the protection afforded by the laws; and as large a tax is laid on this as on property of any other kind, while the gill nets pay none whatever.

It has been suggested that the laws regulating fisheries are unconstitutional. It so, let them be repealed; but while in force the owners of fisheries are entitled to all their benefits, and transgressors subject to all their penalties, precisely as in any other case whatever. High legal authority,\* however, has declared them constitutional, and if sound policy had not dictated them, it is not likely they would have been enacted by the united wisdom of Pennsylvania and New Jersey. I have been credibly informed, however, that the reason why the owners of those fisheries have not enforced the laws against the drift-net men is, that they are in fear of some private injury from them, should they do it. The owners of fisheries generally reside on or near the banks of the river, and the gill nets being frequently in operation all night, and the men generally of the vilest character, they fear to enforce the laws against them, lest their buildings should be set on fire during their slumbers, and themselves and families perish in the flames. It is said that two persons from near Honesdale, in this state, who were floating a raft down the Delaware, in April last, came before a justice of the peace and made oath that they heard a number of drift-net men profanely swear they would take vengeance on the man who would execute the laws against them, and if they could not accomplish it otherwise, they would burn his buildings; which affidavit is now on file in the office of the magistrate. And I also learn from undoubted authority, that a constable, while in the performance of his duty and the execution of his office, a few days ago, was knocked down by some of these gill-net men, while attempting to arrest them, and shamefully beaten and abused, as were also several others who were with him, and but for the timely aid of a number of shore fishermen, who rushed to his assistance, would probably have received still greater injuries, the drift-net men being armed with guns, clubs and stones. This, indeed, exhibits a sadly depraved state of things—an awful delinquency of morals, and a rapid stride towards jacobinism; and certainly calls for the vigilant interference of the civil power. When peaceable, quiet and respectable citizens are absolutely afraid to protect their property, assert their rights, or support the majesty of the law, lest the vengeance of bandits and outlaws should be wreaked upon them, the state of society is truly deplorable. Better live among savages than in a land professing to be civilized, where law, order and government are trampled in the dust. A CITIZEN.

#### TO MAKE NAMES GROW IN FRUIT.

From the Charleston Transcript.

When peaches and nectarines are about half ripe, cover the side exposed to the sun with strips

\* Judge Baldwin.



or specs of wax, in any desired shape or form, which hinders the sun from coloring the part covered; and, when the fruit is ripe, and the wax removed, it will be found marked in the manner described.

#### A SPECIMEN OF AGRICULTURAL LEGISLATION.\*

From the Kentucky Farmer.

The Virginia legislature, at its late session, passed a law creating a board of agriculture, to consist of eight members, to be appointed triennially by the executive. We note this movement as a specimen of the policy of the times. From a mere reading of the law, one might draw the inference that the legislature of that venerable commonwealth—"the mother of men"—the mother of Kentucky—intended to demonstrate to the world that she had private citizens more magnanimous and more patriotic than even her lawgivers; for the law assigns no pay to the members of the "board of agriculture." Verily, if this be magnanimous and patriotic legislation towards the greatest interest of the country, the sons of Jacob, required by the Egyptians to burn bricks without straw, were not so cruelly enslaved as has been represented. The editor of the *Farmers' Register*, (from which we copy the law below,) is surely guilty of a *sarcasm* when he says by the provisions of this law the existence of the board is "*barely tolerated* by the government, instead of being encouraged, sustained and aided in its course and the pursuit of the designed ends." Really, this act will constitute the era of agricultural legislation. We do not doubt, now, that laws for the promotion of agriculture, so long supplicated from our hitherto inexorable law-makers, will be enacted by all the states, and printed and distributed as widely as "American primers" and "spelling books." Nay, we should hardly marvel, henceforth, to see crops growing, upon lands never ploughed, from seed never sown. The long search of ages is terminated! The philosopher's stone, from its dark, deep hiding place, is brought to light; and its discovery will be the glory of this age. Man, in future, may fatten and grow strong without bread; his sinews, unrelaxed by toil, will become elastic by straining. Kentucky now, whose legislature we have often and earnestly implored to do something in behalf of agriculture, worthy of her name, her character, and her interest, will no longer hesitate to take that interest under consideration and protection. It is true, committees have sometimes proposed, for the consideration of the friends of agriculture, acts not unlike this of Virginia; but whether from fear of the tremendous consequences of such legislation, or other motives, (a little bird

whispers, *dread of merited ridicule*,) they have not been adopted, we are not satisfactorily advised. Probably a precedent was desirable, drawn from the wiser practice of older governments. If this be the true conjecture, Kentucky may no longer delay imitating the example of Virginia. She proved her descent, as a daughter of the Old Dominion, when her politicians proposed laws for the encouragement of agriculture, having no provision to render their execution effectual; she will manifest only a dutiful respect, by copying the statute of her mother.

But this is a subject too serious for satire; even if we had no fears of getting knocked on the head by our friend Ruffin for impertinently meddling with the policy of Virginia, and possibly trampling on state rights, for which we profess a due regard. Praying your mercy, then, brother Ruffin, we beg leave to add some remarks as applicable to Kentucky and the other states as to Virginia.

What can be the reason that the legislation of this country has never regarded properly the agricultural interest? Why can nothing be done for its encouragement and improvement? How is it that, in this republican government, the farmers, holding the political power, and their interests supporting all others, whenever they seek from their agent, the government, even a small share of that revenue which they *chiefly contribute*, to effect objects of importance to the whole community—but yet too great for individual accomplishment—how is it that they are for ever either insulted by a seeming but ineffective acquiescence or repulsed by an absolute denial? There is no subordinate interest of the country which has not, times without number, received the fostering care, the encouragement and support of legislation. Agriculture only, the great foundation which supports the prosperity of the country and nourishes into life all the other arts, has been regarded by the government which it chiefly maintains, as a step-child. When agriculture has begged, implored, and far less than have been lavishly given separately to less important interests, they have been denied. She has sought aid for the execution of objects by which all interests would be promoted; for such is her direct and incidental connexion with all the interests of the country, that a direct benefit to *her* could scarcely be less a benefit to them. True, she has enjoyed incidental benefits from favors granted directly to other interests; but that is only because *their existence* depends upon her prosperity, as the healthy action of all the organs of the body depends upon the vigor of the heart which propels the life blood into every ramification of the system. Now here we see, in the preamble to this Virginia law, the lawgiver's confession of the great importance of agriculture, of the duty of government to encourage and foster it, and of the utility of organized labor under legislative sanction, to promote it; and the enacting sections prescribe duties to be performed by a board of agriculture, more laborious than those assigned to the executive department of the government, and which, properly executed, would prove not less promotive of the general prosperity. The board are required to report annually to the legislature a general view of the agriculture of the state—the business of a commissioner of general survey; they are to report the nature and quantity of agricultural pro-

\* We earnestly wish that these remarks of Mr. Stevenson, the editor of the *Kentucky Farmer*, could be read by every member of the legislature of Virginia. Never was sarcasm more just than this; nor more correctly applied, than to this wretched abortion, which is the first-born and sole measure of Virginian legislation, for the aid or improvement of agriculture.—Ed. F. R.



ducts—the business of a statistical commissioner; they are to collect and digest such facts in relation to the improvement and cultivation of the soil and the best modes of preparing its various products for their appropriate uses as they may think would afford useful information to the agricultural community—the business of statistic collectors, agricultural chemists, practical farmers, manufacturers and mechanics, and withal men of profound judgment in these branches of knowledge and art; they are to report the relative foreign and domestic encouragement given to the various products of agriculture and to suggest such measures to the legislature as may be necessary to develop the resources and promote the general interests of agriculture—the business of merchants, political economists, tariffites, free-tradeites and statesmen. Now what, gentle reader, do you suppose the legislature of Virginia offers in compensation for the performance of these vast and important labors? A million annually? For surely, well performed, they would be worth that sum. O no; important as the preamble rates them; the enacting clauses of the law do not value them a farthing! Well now this is just of a piece with the whole course of American legislation on the subject of direct encouragement of agricultural improvement—for ever making paper concessions—never effectively doing any thing. Massachusetts and perhaps New York should be excepted from this sweeping denunciation; they have certainly done a *little*—and but a very little—for this great interest.

The labors designed by government to promote the agricultural interests, should be assigned a bureau, if not an independent department, with executive or ministerial powers adequate to the end.

Now to conclude—for we have extended our remarks further than intended—the primary source of all the shameful neglect of agriculture by government, lies in the supineness of the people, the farmers themselves. Until they cease lending themselves to the blind and subservient idolatry of party; till they, instead of tying themselves to the tails of the paltry demagogues of politics, demand action from their political agents in the execution of trusts solemnly delegated for the protection of *their interests*, they may still expect a kick whenever they present themselves at the door of legislation asking any means for their promotion. Let the farmer appreciate more highly his political rights and his professional dignity and interests; let him be the master of his servant, not the slave of his bondman; let him understand his own interests and urge his rights as becomes one endowed with wisdom and judgment and will; and we shall see the spirit of justice and liberality to neglected, abused, injured agriculture awakened in the halls of legislation. All depends on the farmers themselves—they may pay if they choose, all the revenues, and permit them to be expended in any thing but promoting their direct interests—even in insulting their interests—they may do this; or they may reform the legislation of the country. They have a power which they may exert for their own weal or woe; let them choose their own policy.

DESULTORY OBSERVATIONS ON THE BANKING SYSTEM OF THIS COUNTRY, AND THE EFFECTS OF ITS DIFFERENT MODES OF OPERATION. ADDRESSED TO THE CONSIDERATION OF THE AGRICULTURAL INTEREST.

Continued from page 286.

*XV. The loss and gain of banking to the banking interest, and to the whole community, compared. Results of the depreciated currency of solvent banks.*

In the last number, the course of the banking system of this country was traced from the highest possible state of prosperity, and of the greatest safety, to its subsequent and inevitable result of suspension of specie payments. Now let us see what has been, and will be, lost by the community, for the purpose of furnishing gain to the banking and borrowing interest, by the issue of paper money, and for maintaining unjust profits by means of suspension of payments.

As depreciation of the paper circulation, compared to that of specie, (which is the only standard rate of value,) is the necessary precursor and immediate cause of the banks' stopping payments, so that stoppage becomes the cause of still greater depreciation of the dishonored paper money. The bank notes that were but a half of one per cent. less in market value than specie, (while the banks paid the amounts promised by the notes,) the day before the banks stopped payment, would fall 5 or perhaps 10 per cent. the day after the stoppage. The degree of depreciation would vary with circumstances—such as the expected nearer or remoter time of resuming payments, or the greater or less excess of paper issued, or the degree of public confidence in the ultimate solvency of the banks. In the suspension of 1837, the notes of the Virginia banks fell, as soon as the suspension was declared, 10 per cent. below specie in market price, and afterwards declined still more. At this time, they are only 4 per cent.; and in the suspension of 1813, city bank notes, (that is, those in best credit,) were 20 per cent. and country bank notes from 20 to 50 per cent. below the value of specie. Yet all those were banks reputed solvent—or believed to have the means of ultimately paying all their notes and other debts. If supposed to be insolvent, as many other banks have been, and now are, the depreciation would have been much greater. The fluctuation alone of the rate of depreciation adds very much to the tax of its amount; thus, if sometimes at 4 per cent., then 20, and then but 4 again, and next 10, these changes would be much worse for the suffering and ignorant community (though not perhaps for better informed gambling stock-jobbers and speculators,) than a steady average depreciation of 10 or 12 per cent. This truth is so obvious as to need no proof. But as it is impossible to exhibit truly the evils of a depreciated currency continually changing in value, let us suppose to exist, and observe the effects of, the lesser degree of evil, presented by a steady and uniform rate of depreciation. And, from the estimation of this lesser evil, the reader may afterwards infer how much more it would be increased by continual

alterations of the degree of depreciation, operating to repeat the first and general ill effect on the value of labor and profits at every new fluctuation, whether in rising or falling.

Let us suppose the average rate of depreciation of bank paper, during a stoppage of payments, to be 10 per cent. below gold and silver. Before the suspension of payments was announced, or before the "run" upon the banks had commenced, of course there could have been but little specie in circulation; for our supposition was of a case where banks had issued as much paper as circulation could absorb while bank notes remained payable in specie on demand. As soon as the suspension is declared, of course all the little specie before in circulation disappears, and the country is without any currency whatever, except the irredeemable, discredited, and depreciated bank notes, with which circulation is filled. It is then not a matter of choice whether such money shall be received and paid, and thus continue current or not. *There is no other money*—and of course every body is obliged to use it as freely as before; and such would be the case even if the depreciation were five times as great. Not only are individuals thus compelled to take the depreciated paper, but even the government; for the government, whose business it is to provide or indicate a currency, had left this important attribute of sovereignty to be usurped by the banks, and therefore the government is in the remarkable and most feeble and helpless condition, of being without any solid, proper, or legal currency whatever. Legislation perhaps has not yet cheated all creditors, as regularly afterwards follows bank suspensions in Virginia, by making the depreciated paper money virtually a legal tender—and thus violating the constitution of government, as well as private rights. But even in advance of this policy, (of "relief laws," "stay laws," &c.,) *public opinion* alone is powerful enough to forbid any creditor exacting his debts in specie, or otherwise charging to the debtor the amount of actual depreciation. Then, every man to whom money is owing for his labor, or the previous sale of his property, is paid actually but 90 dollars for every 100 due to him; and thus, at the first dash, every debt due throughout the whole country is taxed and reduced 10 per cent.; and that amount is transferred from the possession of the creditor class, to the debtor class. This amount of property thus forcibly transferred, would be an enormous public evil, (independent of its wrongfulness,) greater than all possible public benefits previously derived from the banking system. But this is not all. Prices in general, so far as they are matter of mutual agreement, it is true, will in time be accommodated to the new depreciated value of the currency. But this cannot be done at once; and while gradually reaching that point, the benefits of the changes will always fall to the well-informed and cunning traders or stock-jobbers, and money brokers, and the losses will fall on those who earn their living by selling their labor, or the products of their labor. But very many kinds of prices cannot be changed, even gradually, from the nominal to the real value of the depreciated currency. All who live on fixed salaries, or receive prices fixed by previous contract, must continue to lose one-tenth of their income, for the profit (to the

banks) of the fraud of stopping payments. And indeed many other prices, especially of various kinds of labor, are so fixed by custom, though not by law, as to be very slow in changing to suit the new value of money, and of course are so taxed in proportion to the slowness of their change. The prices of the work of bricklayers and plasterers, of house-painters and of many others, are at certain rates according to the precise measurement of the work executed. Now, to make prices fair in these cases, they should rise 10 per cent. *in the next hour* after the bank paper and only currency of the country had sunk in value 10 per cent. Yet all these mechanics, and also those who employ them, know well that no such sudden and proportional rise of prices for their labor would take place. And in time, all other prices which are not fixed, rise in proportion to the depreciation of money; and after millions of value being transferred from the rightful owners to other persons in making the change, it might be, if the rate of depreciation were really fixed and steady, that prices would be again fairly rated upon labor and property, by every thing being charged 10 per cent. higher than at the former specie prices. But, in practical operation, before this new and fair graduation could be reached, the ground would have been again shifted by a new fluctuation of price, and a different rate of depreciation of the currency; and every fluctuation, whether by increasing or decreasing the previous depreciation, would cause more evil than before, by again disordering prices, and transferring property wrongfully; and it should be observed that the transfers of value would not be directed by mere chance, but would generally be from the most ignorant to the most artful; and that the greatest gainers by this game of speculation would be the same banking and stock-jobbing class, by whose agency and for whose benefit the first great fraud and the great consequent evils were produced. During a state of fluctuating depreciation of currency, the prices of labor and of property are continually pursuing the steps of depreciation, but are always far behind, and never can overtake them.

But the increase of nominal prices of property does not stop at the proper mark required by a fixed and permanent depreciation of money; and this is another great evil. The great mass of the community will never be able at first to understand the true cause of the rise of nominal prices; and what is in truth merely depreciation of money, is believed to be an increased and still increasing value of land and other property, and even of general and growing prosperity. Therefore this mistaken and foolish view of the matter causes property, after it has reached the 10 per cent. of nominal appreciation, suited to 10 per cent. depreciation of the paper money, to continue to rise still higher, merely because of the belief that the first rise was real, instead of nominal. And the more rapid, and the higher the advance in price, and the more baseless the appreciation, the stronger will be the general confidence in the "rise of property," and the more therefore will it continue to rise. But all this delusion must come to an end, soon or late, either by a return to specie payments and specie prices, or by the people coming to a proper understanding of the cause of the rise of prices. And both

in the rise and the subsequent fall of prices, there must be an enormous amount of value transferred without equivalent, from the rightful proprietors to other persons. But pecuniary losses, numerous and great as they would be, and the entire ruin of thousands of the honest and laborious classes of society, to enrich the "knowing ones," would not be so injurious to the country as the moral evils which will as certainly follow mad speculation, as the spirit of speculation will previously be the effect of such abuses of banking, and depreciation of bank paper. Not one of the community would entirely escape the contamination. So many would seem to be growing rich by the rise of property and fortunate purchases, that the rewards of labor and of ordinary business would be deemed poor and contemptible in comparison. All would be in haste to get rich, and would become speculators for that purpose; and when awakened from the delusive dream of wealth to be acquired without labor, they would be far less fitted than before to return to labor, and to submit to the then much increased privations of poverty.

We leave to every reader to estimate for himself the amount of losses to be suffered by the whole community, both in the immediate and remote effect of a depreciated and exclusive paper currency. The highest and the lowest estimates of loss may vary by many millions; but the lowest rate of this one item of the cost of the system, fixed by any unprejudiced and judicious calculator, would exceed all its possible benefit to the banking interest, as well as to the public.

#### *XVI. The further operation, by insolvent banks.*

But, enormous as are the evils and losses, to the public, which have been considered, they have been only those of what are deemed *solvent*, and such as *may* prove *ultimately responsible* banks; of such as, by the long continued exercise of their exclusive privileges, and obtaining the enormous profits thence derived, are enabled to repair previous losses, and even renew entirely squandered capitals, and thus, in course of time, to return to specie payments, and to the discharge of all other than *current* obligations and legal demands. We have not noticed, directly, the far worse results, which have been so extensively and ruinously felt in a large portion of the United States, of banks avowedly or undisguisedly bankrupt and insolvent, and by which the public, as note-holders and creditors, suffer all the continually increasing steps of depreciation, down to the entire extinction of all the credit, as well as all the value of the notes. In Virginia, as yet, such evils have not been experienced, merely because the government has always sustained the banks in their greatest straits, against their creditors, and in defiance of right and justice; and has thus enabled the banks to recover from disasters and dangers, which would have produced bankruptcy without that efficient support. But numerous banks, elsewhere, have become avowedly bankrupt and insolvent, and the holders of their notes have not only been cheated in gradual depreciation, but also in the final extinction of all value of their whole amount; and by which greater extremes, losses have been suffered by the plundered country to the amount of hundreds of millions,

over and above all such as we have had under consideration in the foregoing remarks. For, whenever such complete results of fraudulent banking occur, they indicate always the greatest possible previous expansion of paper currency, and its necessary effects in altering the standard of value, and transferring the possession of property from the rightful owners to other hands; and therefore the loss of all the nominal amount of the paper circulation, though complete, is not *in magnitude* a tenth part of the previous losses by real depreciation of money, fancied appreciation of property, general banking speculation carried to the utmost extremes, and the consequent evils to all concerned, except to a few artful or lucky players at the great laro table of banking, and other speculation, in which the interests, or profits of every individual are staked, by compulsion of law and other circumstances, if not by the choice of the possessor.

#### *XVII. Recapitulation of the particular benefits and evil effects of solvent banks; and the parties to whose share they respectively fall.*

And now let us re-state concisely, and place in one view, the several points of gain and of loss, and both the benefits and the evils, caused by the banking system of this country.

The benefits are—

1st.—The most important gain, and which is exclusively for the profit of the banking or stockholding interest, consists in the creating of paper currency, to an amount much greater than their capitals or specie, and, by lending it out, drawing interest upon all the excess of issue beyond their capital so vested; which profit will be *less* according to the moderation, prudence, and honesty of the banks—or *greater*, according to the deficiency of all these qualities.

2d.—The benefit to the class of traders without capital, and other needy borrowers, who can, from the carelessness, and indulgent disposition, or interested favoritism, of bank directors, obtain loans which would be difficult or impossible for persons of such doubtful responsibility to obtain from any more cautious individuals, managing their own private property. These adventurers, if successful in their speculations, and lucky in the risks of trade, make fortunes out of nothing; if unlucky, they become bankrupt, and are not then much worse off than when commencing operations; and their creditors or sureties, and not unfrequently the banks, have to bear the loss of the debts thus incurred.

3d.—A benefit to the public, or general interest, is the economy of dispensing with (and exporting, to exchange for commodities,) the costly currency, gold and silver, and using instead the cheaper substitute of paper currency.

4th.—Another advantage to the community is the undoubted greater convenience of paper over metallic money, for keeping, handling, and especially for transmission, or distant transfers. This latter convenience, however, for large sums especially, is now usually and still better attained by means of bills of exchange than by the use of bank notes; and other means might be used, in addition, and which will be adverted to again hereafter, to secure this great convenience, without resorting to the circulation of ordinary bank pa-

per, or the usual operations of banks of issue and circulation.

The evils of the system, to be as concisely recapitulated, are—

1st.—The substitution and sending abroad the previous metallic currency, of intrinsic, solid, and nearly invariable value, and which nothing can prevent a country's obtaining in sufficient quantities, if it produces commodities to sell abroad; or make it lose, after having obtained such a currency, except this policy of substituting it by a paper, or other less valuable currency. So far, the paper currency may not be greatly redundant, nor sensibly depreciated; and the banking operations honest and prudent, except so far as the system is necessarily dishonest in principle and unsafe in practice. And yet, external and unavoidable causes may, and indeed must, sometimes bring discredit on the paper currency, and consequently suspension of specie payments by the banks.

2d.—To the country, and especially to its government, the being suddenly brought by general bank suspension, or stoppage of payments, to the wretched and feeble condition of being entirely *without money* for domestic trade, taxes, or to carry on war—or any other than a discredited, depreciated, and altogether unsound currency, which by the constitution, and also by laws still in force, is *not* legal money; and there is at once a general and total inability to comply with any pecuniary obligations, and to pay any debts, at the very time when the interest and the necessities of creditors (produced by the general shock to credit,) require most strongly the speedy compliance with such obligations.

3d.—To individual creditors; for this awful conflict of the rights of creditors, and the refusal of banks to pay, and the inability of other debtors, is soon ended by the interposition of law, which (though in opposition to the constitution and to justice and to honesty,) legalizes the depreciated paper currency, and thereby confiscates as much of every existing debt and contract, as is equal to the measure of depreciation of the paper currency, then and thereafter.

4th.—To proprietors of land and all other property, in the change of its market price, and apparent value, caused first by the depreciation of the currency, and then by the spirit of speculation engendered by that depreciation, and the false belief that the value of property had risen, and continued rising, instead of knowing the truth, that the currency had fallen, and was still falling in value. And this great evil, tends to convert the whole community to sellers and buyers, and speculators, to the general and great injury of nearly all the individuals engaged. The fluctuations and successive changes of the rate of depreciation, all serve to magnify still more the first and general evils of this kind.

5th.—To the moral condition of society, disordered and unhinged by the introduction and extensive diffusion of a spirit of speculation, and love of gambling adventure, prompted by numerous examples of great fortunes thus suddenly acquired; and the consequent neglect of, and disgust for the pursuits of laborious and patient industry and frugality, formerly the only roads to wealth and respectability. Thus, even when the banking bubble has burst, and men are no longer intoxicated and deluded by the offered

sources of wealth without labor, like other suddenly sobered drunkards they are left in a state of prostration both of body and mind, and unfitted to return to their previous habits of judicious thinking and acting.

And these, and many more minor but yet important items, constitute the frightful price that a people must pay for the few real benefits and conveniences connected with the fraudulent banking system; and which few benefits may nearly, if not quite, as well be secured by a banking system which would be honest in principle, safe in operation, and from which all the great evils and dangers of banks of circulation would be effectually excluded. Such a system, or at least some secure steps of approach to it, will be hereafter proposed. But, inasmuch as a good system will be reached only by carefully avoiding the known abuses of the existing bad banking system, it is proper first to mention some other evils invariably attendant on and connected with the ordinary procedure of banks, but which in fact are not at all necessary to the best working of even the previous bad system, as designed by law. We shall very concisely refer to these several minor abuses, which are too notorious to require proof, either of their existence, or their evil effect.

#### *XVIII. Abuses in the selection, and official influence, of bank directors.*

The persons who are always the most zealous and active to obtain the enactment of banking privileges, and the greatest possible extension of banking operations—who assume to monopolize all the practical and useful knowledge on the subject that is extant—who are the most influential and successful in spreading delusion in regard to banking—these persons are not actuated by the public and general interests which belong to all citizens, nor by even the peculiar interests of capitalists who seek to make profitable investments; but they belong to, and indeed may be said to constitute the great *borrowing interest*, or class of merchants and dealers who, being either without capital, or but very insufficiently provided, are anxious for the establishment, in any manner whatever, and without regard to other interests than their own, of new and more available sources of loans to themselves, to enable them to carry on their unsubstantial and hazardous business and speculations. This class of people, in the general, see nothing whatever in the banking system, and learn and care for nothing in regard to it, but as it offers means for obtaining loans for themselves; and the greater the abuses of the system in its subsequent procedure, the more it will be lauded by this class, provided these abuses tend (as they certainly will,) to furnish them with larger loans, and longer times for payment.

But the worst part of this evil is yet to come. When banks are chartered and put in operation, it is out of this very class of borrowers that the boards of directors are always principally constituted; and who, even if not always the most numerous, are sure to be the most active and influential members of the directory of every bank. If there should, perchance, be one or two other directors of a board, having no connexion with trade, and who are actuated by no other than the common and public interest, they are ready to ad-

mit their want of acquaintance with practical business matters of trade, and of banking, and to follow the guidance of their fellow members who assume to be so much better informed. If a large stockholder and mere capitalist has a seat at the board, he is still the more ready to yield to the others, because all their objects of expanded circulation and extended loans, which the others so much desire, will add so much the more to the immediate profits of the stock. And thus the directors of the borrowing class will do all the business, and direct all the policy of the banks; and most assiduously will they attend to the performance of these nominally *gratuitous*, but really very *highly paid services*. There is no office of honor or profit in our country, of which the duties are so strictly and regularly performed as that of a bank director—which brings no pay, and certainly no honor. Yet who ever heard of a board of bank directors failing to make their stated meetings—or failing to go through the regular business of lending out to applicants the fund for discounts, and of which amount the directors can take a very large and undue share for their own use, or for that of other persons whom they desire to serve.

Now we mean to attach no stigma to the individuals who fill these offices in Virginia, and wherever else that banks have not acted worse than in Virginia. Most, if not all, of these individuals are of respectable, and many of them of very high standing in society. Few of them would permit any debt to be made by their favored friends, that they did not *believe* to be secure. Most of them would avoid, as they would death, any individual act, for their individual gain, which they and the world would deem dishonorable; and they would think themselves disgraced for ever, and deservedly, if guilty, individually, and for their own private and exclusive gain, of any such acts of duplicity, bad faith, falsehood and fraud, as they readily advocate and maintain in the action of the banks they govern. But these individuals, however respectable and virtuous as individuals, are, as bank directors, acting for their own interest disguised under the plausible and always delusive semblance of public interest; and tempted and urged as they are—and seeing things through a false medium—supported in wrong measures by the most noisy and busy part of the public, and opposed by the same, if indicating any intention of doing right—it would be a matter of astonishment if such bank directors were to act differently from their usual course. They would possess more virtue and wisdom than belong to ordinary men, if they did not serve their own interests as borrowers, when they thus had persuaded themselves that to do so was required by the public interests.

These remarks apply to such general measures as making excessive and unjustifiable issues of paper money, stopping payment, and using means to still more deceive the public, and command its misplaced confidence, by professing to pay specie promptly and fully, when it is not done truly or to any useful extent; or promising to meet that and other obligations at future times, when they have no expectation of its being done. But there are sundry other acts, of frequent occurrence, in which nothing but private and individual interest can be supposed to induce the movements of particular directors. These are, the partial favor

shown in making discounts, or continuing standing "accommodation" loans, to themselves, their relatives, or their business connexions. And still worse, of profiting by their official influence to obtain large sums, on sudden calls for speculation, by "over-checking," (that is, checking for and drawing as if from deposits, when they have no money deposited in bank,) and of using these resources for the purpose of practising indirect and extortionate usury upon persons from whom proper and legal banking facilities are withheld, perhaps by the votes and influence of these same directors. But these *worst* cases of official treachery and individual extortion, though they have been common enough elsewhere, we trust have not yet served to make still more black the banking operations of Virginia. Both here as well as elsewhere, however, there is ample opportunity for bank directors to abuse their trust; and to a very blamable extent many of them here, as well as elsewhere, have profited by their opportunities.

Another great abuse in the constitution of the directories of banks is in the *manner* of the appointment of the members. About half the members of each board are *nominally* appointed by the votes of the stockholders, and the other members by the executive branch of the government of Virginia. But in *truth* the appointments are almost always made for each bank by the unseen and secret recommendation of the president, or some one officer of that bank, or at most by the combined influence of a few secret advisers, of those who already hold and exercise the power of the bank. The governor of the state, of course, can know nothing as to the peculiar qualifications of, or objections to, men for these places for every bank, and in every town in Virginia; and he must necessarily rely upon the recommendations of the most prominent men of each bank. As to the election by stockholders, there is in that even still less chance for free and uninfluenced appointments. Most stockholders leave the business of the general meetings to be managed by others—and those who act at all, generally act by proxy—and, until recently, the president of each bank held almost every proxy. The stockholders who actually attend are residents, and generally of the *borrowing class*, and therefore much under the influence of the man, whoever he may be, who has most influence in giving "accommodation" to borrowers. Therefore, it comes to this, that directors are generally the mere secret nominees of each other, or of a single more influential member of their board, or officer of the bank. Hence it is not strange that one of the strongest claims which can be presented for the appointment to the office of a bank director, and the qualification which a director most generally possesses, is that *the individual needs to borrow a great deal of money*, and therefore that a seat at the board will be *particularly convenient to his private interest*.

#### *XIX. Abuse of banks acting as exchange brokers.*

Another great and shameful abuse by the banks, and altogether an illegitimate and unnecessary branch of their business, is their dealing in exchange for profit. It is altogether false that this is necessary for the convenience of the public. The system of bills of exchange was in operation, and its benefits for transferring funds fully

experienced, centuries before banks of circulation were established. The banks buy from individual traders drafts for money due to these individuals in distant places; and, by a course of indirect usury, derive from this a large portion of their profits, especially during times of suspension of payments, and the greatest discredit of their own notes. Now if the banks did not procure these drafts from individuals, these first holders, or other private dealers in exchange who would purchase them, would serve the public just as well, and as cheaply as the banks do, in selling drafts to those who required them; and the banks would then be deprived of the temptation which exists at present, and which is continually and willingly yielded to by them, to derive a profit from the discrediting of their own notes, and which profit is increased in proportion to the degree of the depreciation—and which depreciation is caused, and increased, solely by the voluntary act of the banks in refusing to pay their notes. Now here is existing, and in continued operation, a part of a general system of banking, by which the profit of the bank is increased in direct proportion to the extent of its violation of its own obligations, of truth, of honesty, and according to the measure of degradation of its reputation for solvency, in addition to all these other grounds for distrust. And these and all other proceedings of the banks are conducted by directors who, as individuals, have a further interest (besides their more general interest as stockholders,) in having the business of the bank as much expanded, and therefore as unsafe as possible, and its circulation and its credit as unsubstantial. How is it then possible to expect to obtain even the little good in results which the present banking system is capable of yielding, when the interests of both the corporation and its directors are deeply and directly concerned in producing the worst possible results? The working of such means cannot but lead to ends as iniquitous and destructive of right, and of public interests, as are shown in the present condition of the banks and the country.

It may be useful to show, in detail, the practical operation of a bank's dealing in exchange; and, for illustration, we will take one of the hundreds of real cases, such as are of every day's occurrence. In Richmond, and still more in Petersburg, the manufacturing of tobacco is one of the largest and most profitable branches of business. The manufactured tobacco is sent to the northern cities, and principally to New York, to be sold; and, as soon as sold, the consignee in New York authorizes the manufacturer here to draw on him at 4 months' time. That is, the manufacturer's money will be paid in 4 months in New York, to his consignee or agent there, and of course he will have so much of funds in New York, either to bring home in specie, or to be otherwise disposed of. But other persons here will owe money in New York, and have to pay it at or about that time; and therefore it will be more convenient and profitable to both parties, that the tobacco manufacturer, instead of bringing home his money, should sell his draft for it to some person who has to pay money at that time in New York. This prevents the necessity of a double transmission of money; and this beneficial operation is what is called the selling and buying of a bill of exchange; and the whole operation, carried on by any one who

makes it a business, is called dealing in exchange.

The present difference of price between the notes of the banks of Virginia and New York funds, in Petersburg, is 5 per cent.; that difference being the measure of depreciation of Virginia notes, at home, on account of their being irredeemable; while the New York banks pay specie, and therefore their notes at home are at par with specie. It would follow, that a draft on New York for \$100, having four months to run before being due, would be worth at maturity, (depreciation and the price of exchange remaining the same,) \$105; and deducting 2 per cent. interest (at 6 per cent. per annum) for the 4 months which the draft has to wait for payment, it is worth \$103 (very nearly) when sold. And this is precisely what the buyer of the draft could afford to pay for it in cash.

The tobacco manufacturers who thus obtain New York funds for all their sales, and are authorized to draw for them at 4 months, have generally too little capital to permit them to wait that time for their returns. They therefore would prefer to sell their drafts for the premium they are worth, after discounting the interest for the time before being due. Now individuals would buy their drafts, at maturity, or previously, if on credit to that time, and allow the full premium; but individuals, dependent on banks for capital, cannot generally advance the cash. The proper course then would be, for A, the tobacco manufacturer, to sell his 4 months' draft for \$100, on its face, to B, a retailer who owes money or wishes to make purchases in New York, for \$105, for which B executes his negotiable note, to be paid at 4 months, when the draft will be worth that amount, supposing the price of exchange to remain the same. Then the bank should discount B's note, and all three parties will be served. A will get cash for his draft, and also the fair value of its greater value in exchange. B will obtain the New York funds, and on a credit. The bank will discount the well secured note of B, still better secured by the endorsement of A, and receive its fair and legal profit, (and all a bank should receive,) in the interest of the note. But the banks want to make also the much heavier profit of exchange brokers, and indirect usurers—and it is alleged that they will not discount for a tobacco manufacturer either as above, or on any other business paper, unless he will sell to the bank his drafts, and that at a price considerably below the real value. Thus, that he may be enabled to get his notes discounted, though paying for the benefit the fair rate of interest, he must, per force, also sell his four-months' drafts "at face," or their nominal amount, to the bank, which the bank sells afterwards, at maturity, to some other individual at 5 per cent. premium. Thus the bank makes its fair and regular profit, in the discount for the time, and therefore has by the transaction granted no favor to the draft-holder; or the two parties have been reciprocally and equally benefited—the individual getting cash advanced, and the bank retaining the interest, which is the very business which was the main object of its institution, and main source of its legitimate profits. And this being the case, the time which the draft has to run causes no abatement of its value to the bank, for the delay of payment is compensated in the interest retained. Then the value of the draft to

the bank should be rated as cash, and the price of exchange counted in like manner. Yet the regular difference made (at present prices) between what the banks pay and sell such exchange for, (buying "at face" and selling at 5,) after deducting 2 per cent. for the interest, gives a clear gain on the exchange of 3 per cent. on the amount; which is so much of indirect usury made in addition to their legal interest, and which addition makes the interest (or whole profit) to the bank, 5 per cent. on 4 months, or 15 per cent. per annum.

Now it is true, that if, when the 4 months have expired, the price of exchange on New York should have fallen below the present rate of 5 per cent., then the bank will make so much the less by its indirect usury. If, on the other hand, the price should rise in the 4 months, the profit will be the greater in proportion to the advance of price, and of premium which the bank will ask, and sell for. And, as the advanced price of exchange is graduated strictly according to the measure of the rate of depreciation of the notes of the banks of Virginia, and that depreciation again is caused by their stoppage of payment, and graduated by the consequent discredit of their paper money, it is plain enough that the banks hold the power to make the depreciation greater or less, as it pleases them, and, of course, the price of exchange; and that, if they know their own intentions, and can foresee their own course for even a few months ahead, they must also know in advance what their profit on every such transaction will certainly be, and whether they cannot even increase its rate.

But putting aside what is alleged against the banks because of these transactions, and of their disposition, and exerting their power, to monopolize, and to practise extortion upon the necessities of the borrower, and the indirect and heavy usury gained by them in the purchase and sale—we desire to draw the reader's attention especially to the still worse feature of the business. This is, that *the banks have a direct interest in discrediting their own currency*—because the lower it sinks the more profit they will make by dealing in exchange—which is but selling the product of their depreciation, and profiting in proportion to its extent and degree. If then, the great object and end of the banking policy of this country had been to corrupt and render dishonest both the banks, and those who direct and control their operations, the means could not have been better adapted to the end than they are now.

**XX. Remedies for the evils of the banking system. Partial reform, in removing superinduced and unnecessary abuses.**

The next and most important matter of inquiry is, whether there is no possible and sure means for remedying, or at least mitigating the evils of the banking system; or whether the actual absence of all effort for this purpose, by all persons having power or influence, is indeed indicative that there is no hope for either relief or amendment. We will presume to propose measures of reform, which, if not the most efficient or judicious, would, if used to even the smallest extent, certainly operate to remove something of the amount of evil; and which might be adopted to just such extent as the power of bank in-

fluence and other circumstances might permit.

Reform of the banking system might be either partial and limited, or thorough and complete. A most important, though but limited reformation, might be produced by simply abating the worst practical abuses of the system—beginning with the most manifest and least excusable, and proceeding thence to those measures about which there might possibly be some doubt as to their being partially good, or of unmixed evil tendency, in the opinions of intelligent and disinterested judges. We will name such parts of the practice and policy as might be removed without touching the designed powers and operation of the system—and which, if removed, would leave the system comparatively pure, though still, as we believe, of dangerous tendency, and much too powerful in evil effects.

Such a limited reform would be produced, of greater or less extent and value, in proportion as more or fewer of the following changes were made:

1. An unmixed benefit would be produced by prohibiting to banks the dealing in exchange, or at least the selling exchange at more than such small and stated advance of price as would form merely a sufficient compensation when the banks here were paying specie for their notes, and which would never exceed one per cent. to the most remote city of the confederacy. This would remove one great source of abuse, exercised by the banks, of extortion upon individuals, and making a profit upon the possible voluntary discrediting of their own notes.

2. Another beneficial change would be to choose the bank directors, not from the *borrowing class* if possible; and at all events to forbid the persons chosen borrowing money from the particular bank they managed, or being sureties upon discounts for other persons—whose interests, as family or business connexions, might operate on directors precisely as their own individual interests. And as the directors would thus be deprived of their present indirect advantages, and profits, which are so much coveted and so highly valued, it would be proper to pay them for their then disinterested services.

3. Another reform would be secured by putting an end to all standing loans, or "accommodation paper," as termed in bank language; and to bring back the procedure to the original design, and confine it to the legitimate operation of discounting real business notes, having but short time to run (say 60 or not exceeding 90 days) and each note to be paid, and the transaction to be closed, at the maturity of the debt. Then the banks would be truly what they are now falsely called, "banks of discount," and not loan-offices, as they now are; and not always confining their profits to merely 6 per cent. interest, as we have shown, on their inflated paper emissions.

4. A strong safeguard against all neglect, abuses, and misconduct of directors would be to forbid the secrecy which serves to hide misconduct, and to have all the discounts and other similar transactions of the banks open at all times to the inspection of the public. Every attempt to approach such publicity heretofore has been protested against and opposed in the strongest manner, as tending, by exposure, to injure the credit



of debtors. Such could not be the case, unless indeed in regard to persons permitted to be improperly and unjustifiably indebted; and this publicity would effectually, in future, prevent abuses of this kind; the permitting of which has served often to ruin such favored debtors themselves, as well as inducing injustice to other applicants for discounts, and causing great losses to the banks, and great injury to public interests, habits and morals. It would be only such injudicious or spendthrift borrowers who could have any reason to object to the most public exhibition of their discounts. The magnitude of the discounts of safe debtors and judicious merchants, instead of being injurious to their mercantile credit, would have the opposite operation. For they would be an indication of the large amount of their business and their profits; and not of their necessities or necessary embarrassments—as many of the existing long standing “accommodations” would show of many other debtors of different character.

5. A safeguard against banking fraud, and suspension of payments, would be to require that all debts due from a bank, whether for deposits or otherwise, should be payable in specie, if the bank professed to pay specie; and when in a state of “suspension,” and not paying specie, nor professing to pay it, that all such dues should be paid in the notes of the particular bank, or branch. This regulation would restrain the present general and effectually evasive procedure of the banks, which enables them to avoid paying specie, even when professing to pay. By the prevailing system of receiving foreign notes of non-specie paying banks on deposit, and issuing only such notes, and so managing as to remove all its own notes (by exchanging them with other banks or branches,) to distant circulation—and by claiming to pay all checks in “current bank notes,” that is, in the worst kinds of foreign notes which the bank may choose to receive on deposit, (for the very purpose of effecting the evasion—) by these paltry and scandalous tricks, the bank is effectually guarded from being compelled to pay specie to any considerable extent, even when professing to comply with the obligation; and also from the necessity of issuing its own notes, when refusing to pay specie, and thereby being made subject to such penalty for the refusal as may be required by law. If a bank suspends payment, it should at least be subject to such penalty for the suspension as the law had imposed, and the bank had chosen as an alternative preferable to paying specie. This is all that is sought to be secured by this particular measure of reform. It is manifest that by the now general tricks of evasion, (tricks, which if resorted to by an individual, would stamp him with the character of a desperate and shameless bankrupt, if not worse,) the legal obligation of a bank to pay specie is made nugatory, and also the penalties for refusing to pay. At this time, and for years past, if any of the community had dared to put in force the slight and almost nominal penalty on the bank for refusing to pay specie, there would be found scarcely any means to do so. For, by their system of receiving foreign and other than their own notes in deposit, for the very purpose of paying out such notes exclusively, it is scarcely possible to find a note of any particular bank in circula-

tion, in its own town, or the neighboring country. If there were any just ground to complain of hardship in the restriction here proposed, (that is, of all such notes as a bank chooses to receive and to re-issue being placed on the footing of its own notes,) the banks can easily avoid the operation of the rule by refusing to receive such notes as deposits, or, if receiving, by returning them to the banks, by which they were issued.\*

6. This plan of partial reform would not always prevent, though it would render much less frequent and injurious, the occurrence of bank suspensions of payment; and neither would we require (as ought to be part of any *thorough* reform) the closing of a bank, as bankrupt, upon its stopping payment. But there surely ought to be inflicted on every suspending bank some general and truly operative penalty, heavy enough, at least, to prevent the banks from reaping any profit from their suspension, and the consequent depreciation of their paper money—which will always be the result, without some such effectual penalties. The existing law of North Carolina allows to the holders of notes on which payment has been refused (and the penalty required by the holders,) 12 per cent. interest and damages thereon; and this penalty has not yet been found of much effect, in any way, nor is it often put in force. But this, or even 10 per cent. interest, might be sufficient for the particular object in view, if in connexion with, and aided by, the other previously mentioned requisitions of this plan of partial reform.

7. The greatest measure of partial reform, in the removal of the *great abuse* which is the fruitful and unfailing source and subsequent support of all other minor abuses, is yet to be presented. This abuse is the existing partnership of the state of Virginia and the banks. This partnership must be dissolved, and the state must cease to exercise (for its designed and supposed profit, but really to its great loss and injury, on every score,) the trade of banking, and cease to be interested at all, much less to the amount of nearly half of all the capital of the banks of circulation, before any great reform to the banking system can possibly be effected. In proposing this particular measure of reform, we can merely refer thus generally and concisely to the great abuse which it would remove. For to discuss and thoroughly expose all the abominations of the state's being a large banking stockholder, and the consequent intimate connexion of bank and state, would alone require more space than can be here given to the whole subject. Even if considered in the partial and very limited view of pecuniary profit to the treasury, we are satisfied that the entire destruction, without any compensation, of all the commonwealth's interest in the banks, would ultimately operate as a gain instead of a loss to the public wealth. When the commonwealth of Virginia is no longer a stockholder in the banks, nor general surety for their solvency, then, and not until then, will legislation on banking be directed for the public benefit, instead of, as now, and heretofore, for the exclusive benefit of the banking interest.

\* This now general system of operations by banks falsely professing to pay specie, which is but slightly referred to above, was fully stated and exposed in a distinct article at page 163 vol. 9 of the Farmers' Register.



**XXI. Measures of thorough reform. Banks without circulation, or very limited circulation.**

But though the adoption of these several defences would prevent all the petty and most dishonest and scandalous of abuses, which now constitute nearly the whole of the great body of banking operations, it would still leave in existence, and in dangerous force, the great and inherent evils of the banking system in this country; and which nothing short of *thorough reform* can effectually guard against, and render the banking system altogether beneficial in its operation.

There are two great principles of the established banking system which are the sources of all their inherent evil effects; and it is vain to hope for exemption from great danger to public interests, and great frauds upon, and losses by, the community, until these sources of evil are either closed, or much more effectually regulated than now. These are, first, the privilege of creating paper money, and the power of filling therewith the whole circulation of the country; and, secondly, the freedom of the banks and their stockholders from responsibility and efficient penalties, when they fail to comply with the obligations assumed. Either to regulate or put down these privileges and exemptions, would be the main object of our plan of thorough bank reform. But, even if it were any chance to procure a thorough reform, and we could have any influence in directing the plan, we would not aim to reach that end by multiplying regulations and restrictions, and encumbering the statute book with numerous additional provisions, and penalties for violation of obligations by banks. Our system of reform would be very concise. It might indeed be almost comprised in these few words—"let the trade in money be free"—or if that be unattainable, then, "let the banking trade be just as free, and not more privileged, than is the trade in money as legally exercised by individuals." In other words, we would have *free banking* in its fullest sense—but, at the same time, *banking fully amenable to the laws*, and strictly bound by the general restraints of the law. This general system, (if without any exception or limitation,) would put every bank note upon the footing of a bond from an individual, and of which the credit and currency would be determined by the reputation of the individual or banking company by which the note was issued. And each individual partner in a banking company would be severally responsible for the payment of every note issued, and debt incurred by the company.

But though the individual responsibility of stockholders is strictly just, its exaction by law might be waived, as an unnecessary safeguard, in regard to banks on a properly reformed system. And the great and profitable privilege to the banks, of issuing notes as currency, not bearing interest, and which must always be dangerous to the public interests, and a tax levied upon the community for the profit of the bank, might be also granted under proper restrictions, as a kind of middle ground, or transition resting place, between the present vicious system of exclusive paper currency, and a safe and solid currency principally metallic, and the balance of it strictly and fully, and always and truly representing as much existing specie. The paper money thus permitted

should never be more than equal to the capital of the bank, or twice the amount of its specie; and no note to be for less than \$20; and we would prefer that the lowest permitted denomination should be afterwards raised to \$50. The bank might, as all individuals may, in the absence of either legal restriction or legal privilege, issue notes to serve as currency for any less denomination. But they would carry interest, like all other bonds, if not exempted by law, and this would be perhaps a sufficient bar to their excess.

**XXII. Paper money not necessary to make remittances.**

Inasmuch as when a country is furnished with a sufficient specie currency, (as every country producing commodities to exchange for specie would have, if not using paper money,) as we have before stated, the issue of *redeemable* paper does not permanently increase the amount of the general currency, but only substitutes, and causes the sending abroad as much specie as there is currency supplied of paper—it follows that the great benefit which most persons expect from paper issues, that of "making money more plenty," is altogether fallacious and delusive. It is only after the substitution of specie by paper is complete, and the paper is irredeemable and depreciated, that a greater amount of paper money, even in nominal value, can be kept afloat than the former specie circulation, under like circumstances of extent of trade and of general wealth. Then, indeed, any amount of paper can be poured into and kept in circulation; but its depreciation will increase in proportion to the excess; and the exchangeable value of the whole currency will not be materially, and certainly not beneficially changed; and none but the fabricators of the paper currency will derive profit from either a moderate and redeemable, or the most excessive and depreciated emission of paper money. Then, putting aside this vain and delusive, but very general expectation of increasing the amount of sound currency by bank issues, there is no benefit to the general and public interest to be gained from paper money, except its greater convenience for transmission. This is, indeed, a very great and valuable convenience. But it may be availed of very nearly as well by other means, as by transmitting bank paper money. For all large payments, even now, bank notes are very rarely sent to distant places. For such purposes, bills of exchange, (as we have before explained,) are preferable, and always will be used. And if exchange on New York (for example) could not be bought here, for the reason that no one here had funds in New York, (or money due for commodities sold there) then our bank notes would not best serve instead—or if forced to serve, they would be sent back immediately to draw specie—and therefore it would at last be the specie, and not the bank notes, that would be remitted to make payment. But there is another mode more usual and still better than to send specie—which is to send our products, tobacco, flour or cotton, in the ordinary course of trade. Such exportations continually provide to the shippers here funds in New York, or other places with which we trade; and for these funds, bills of exchange are drawn, and sold to those persons who have to pay debts, or to buy

commodities in those places. And thus it is as easy, and is as much a regular business, for our merchants to make payments in England, where an American bank note never finds its way, as in New York, where they sometimes are sent, and would often go, if in good and deserved credit at home. Thus, for distant payments, or transmission, it must be admitted that bank paper is not at all necessary, nor even the most convenient means for remittance.

For payments and transmissions between neighboring towns, as Richmond, and Norfolk, or Petersburg, bank notes or bank checks are now used as most convenient; but the same might be nearly as well effected, if there was not a bank of circulation existing. A certificate of the deposit of money in a bank merely of deposit and discount, in one of these towns, would serve for transmission to another just as well as a bank note. And all that would be necessary would be to pay a very small premium to the banks as compensation for negotiating these exchanges; and, when requisite, the banks would have to settle with each other the general balance upon a multitude of such transactions, carried on through a considerable time. Such transmissions of payments to and fro would, in the general, nearly balance each other; so that there would in fact be rarely any balance necessary to be remitted in specie. And for conducting such transactions the banks would be well compensated by receiving amounts so small as scarcely to exceed the value of the postage and the risk, in sending a bank note by mail.

### *XXIII. Savings' banks, or banks of deposit and discount only.*

Besides certificates of deposits, or credits for deposits on the books of a bank, there would be other means for convenient payments and distant transmissions, in the certificates of deposits in savings' banks. These carry interest, and therefore are more valuable to be retained by holders than certificates of deposit in other banks; and would be an acceptable medium of payment wherever the character and responsibility of the bank had become known.

Thus, for all purposes of distant transmission, and for which bank paper money is usually spoken of as indispensable, and for which, indeed, that currency does *not* serve well, and is not now generally used, there would be much better facilities in bills of exchange. And for payments nearer home, and especially for small sums, certificates of deposit would offer as convenient, safe and cheap a medium as now exists, or could be possible to obtain. But it may be objected, that this would be merely laying aside one kind of paper currency, (bank notes,) to resort to another, in certificates of deposit. Even if this were true in the fullest sense, it would furnish no just ground of objection for the most thorough advocate for metallic currency. For the change would be from a paper currency of unknown, unlimited, and unlimited quantity—not the representative of specie, and impossible to be redeemed in specie—to a paper currency, necessarily limited narrowly by force of circumstances, (if indeed entering into circulation,) of certificates of deposit, of which each one is the evidence not only of a sound and fully and quickly responsible

debtor to pay it, but also evidence of as much real money being in existence, in the bank or elsewhere. If all the coin of a fully supplied country were thus deposited and retained in banks, and certificates of the deposits were issued, and used exclusively for the circulation of the whole country, these certificates could, in the first instance, only amount to as much as the coin actually in deposit; and each paper obligation for a dollar would have a specie dollar in existence, and ready to redeem it. But if deposits of coin thus made, instead of being retained in a mere *bank of deposit*, were *all* used in discounting business notes at short time, as is done by savings' banks, (or banks uniting the operations of discount and deposit, and not of circulation,) and further, if *all* the interest-bearing certificates of these deposits were used as money, and entered as such into general circulation, then, it is true, there would be a creation of additional currency, and so far an evil in one aspect. But, at the utmost, there could be only a doubling of the amount, by issuing an equal sum in paper of so much of the former specie currency, as there were certificates of deposit for that entered into actual circulation, and became part of the general currency; and this could not extend far, as is manifest, because such interest-bearing certificates, though very convenient for particular payments and settlements, would not be convenient for, nor often used as currency; but would be held as other scrip, or certificates of stocks, yielding regular profits. Therefore, it may be safely inferred, that the slight and transitory applications of interest-bearing certificates of deposit to the purposes of money, although (as in all other cases of paper money) so far substituting and causing the exportation of some amount of specie, would not do so extensively; and that this injurious operation would be more than counterbalanced by the great public convenience of so perfectly safe and responsible a paper currency, or evidences of debt convertible at all times to money, as these certificates would furnish. Indeed, no paper evidences of debt could possibly be more safe, convenient and profitable, and certainly convertible to specie, upon the stated rules and engagements of the bank, *provided* the law rigidly enforced the perfect accountability of the bank at all times, and under all circumstances.

If, then, banks merely of deposit and discount were only to be allowed by law, and the dangerous privilege of creating and issuing paper money, (in notes exempted from bearing interest,) were altogether withheld from them, the safe and beneficial operations of banking might be carried to any extent that the trade of the country required, without legal restriction or limitation of action, and with entire safety to creditors of the banks, to the banks themselves, to the currency, and to the public interests. And the certificates of deposits, bearing such uniform interest (say 5 per cent.) as the rule of the bank fixed, with the sanction of law, would serve excellently well for temporary investments of spare funds; and also as partial and convenient substitutes for money, and so far forming a part of the currency, for remittances, or other payments. But, while serving so well and so conveniently for payer and receiver in transactions for which paper currency is better than metallic, this kind of paper never could

enter very largely into circulation, or take the place of specie in frequent transactions, and for small amounts. Their bearing interest would form an inducement to every possessor to retain these certificates of deposit; and the trouble of calculating interest would of itself be a sufficient obstacle to their general circulation, or even frequent change from one person to another. Therefore, under such a general system of banking, limited to the operations of discount and deposit, the country would enjoy all the safe and solid benefits of the banking system, and be secured from all the dangers and evils, by prohibiting the particular and illegitimate operation of issuing paper money. And yet, even where the latter dangerous and always injurious operation affords convenient facilities to the public, the like or as valuable facilities might be afforded, and without danger or evil, by the interest-bearing certificates of deposits in banks of deposit and discount simply. The operations of these banks would be as extensive in all solid and safe business as the present banks of circulation; and the responsibility of such banks as we propose would be much more sure than if they were further privileged with the (to the banks) very profitable, but dangerous power of circulation. Therefore, such banks of mere discount and deposit, in magnitude and extent of sound and useful business, would occupy as large a space and as prominent a position as the now existing banks of circulation, (after the suppression of the latter;) and as the business of the former would be as undoubtedly safe, and the responsibility as perfect, as the present banks are deficient in both these respects, it would follow that the certificates of the former banks would be in better credit abroad as well as at home, than are the notes of the latter. The banks of mere deposit and discount, if honestly and properly conducted, (which the law could compel,) would never fail to pay their certificates promptly; whereas the banks of circulation cannot possibly avoid suspending payment sometimes, and it will now be long before they will even pretend to pay their notes.

Thus, we infer that the dangerous function of creating and issuing a currency of bank notes, as is now universal in this country, is not required, even to a limited and guarded extent, nor to the smallest extent; and that, without it, all the valuable operations of banking, and of a necessary and safe paper currency, can be used, and to their fullest extent. And if so, the limited power to issue, which was left in the foregoing plans of bank reform, might be dispensed with as soon as a really sound currency had been restored, by a sufficient infusion of the metallic ingredient. Then all that would be necessary to restrain the circulation generally of bank notes, emitted by banks within the state, would be to make them bear legal interest from their date, (or, if dated earlier, from the passage of the law;) and some other and still more operative restriction upon all foreign notes, except such as were, by similar law of the states where they issued, made subject to pay, the same rate of interest. Then, if so arranged, there would be nothing to forbid the fullest interchange of such paper money between different states closely connected in trade, (as Virginia and North Carolina,) and by which the state issuing the notes (or some of its citizens)

would, in fact, have the benefit of *borrowing* so much money as the notes promised to pay, and the holders of the notes would have the benefit of the interest accumulating thereupon. And we repeat, that because of the new, just and beneficial feature of bearing interest, these notes never could enter so largely into circulation as to make their injurious effects to the community exceed the benefit to the community.

There would be only two restrictions necessary to impose, and to keep always in force, upon this system of otherwise free but unprivileged banking. One would be to forbid the circulation of notes, as money, of less than a certain denomination—whether \$5, \$10 or \$20. This would be to prevent the nuisance to the country of a small note currency in any shape, and for which there would be neither need nor excuse, when the general system would operate to preserve enough specie for all small dealings. And neither would it be difficult, under such circumstances, to effectually prohibit small notes. They have not been, and cannot be, driven from circulation at present, even by the severest penalties imposed by law—and all such laws become a dead letter—because the operation of law itself has served to expel silver from circulation. Smaller sums than \$5, or even \$1, *must* be used; and if the legal penalty for circulating any such were made infamy and death, the law would be as powerless as are the present pecuniary penalties. But if specie be but *permitted* by law to circulate, there would never be any difficulty in preventing by law the circulation of either foreign or domestic bills for small amounts.

The next restriction on all banks should be, to compel the performance by them of whatever they had undertaken to do, and were pledged to the country and the government for; and especially in regard to the prompt payment of specie for all notes payable on demand, or certificates of deposit at the limit of time fixed by themselves for the redemption. It is now a fashionable and favorite assumption in defence of banks that fail to pay their notes, that they then stand upon the same ground, and ought to be considered precisely as individual debtors who cannot conveniently pay their bonds on the day when they become due—and that the holder of the bank note has the same remedy at law, as the person to whom the bond was executed and is due. But the cases are altogether different. The contingency of the payment of a bond not being punctual is understood, and the consequent injury, and the remedy, are duly weighed beforehand; and these considerations very generally are in effect *insured against* by an additional amount being given to the bond, if for the purchase of commodities. Thus all purchases on time, for which bonds are given, are at a greater advance upon the cash price than merely the amount of legal interest for the time of credit. But bank notes were issued, and passed into circulation, and, by expelling specie, became the general or sole currency of the country, so that every man is *compelled* to receive and to use them as money, when no matter how much depreciated subsequently, upon the ground of the perfect confidence of the early receivers of the notes that they would at any time be paid in specie on demand. Without this general confidence, the notes could never have obtained circu-

lation. The issuers have profited to the fullest extent by securing this confidence at first, and, in justice, ought to be compelled (if not willing) to meet their voluntary engagements, upon which alone that confidence was founded. So far as to banks that expected and intended to comply with their engagements. And as to any banks that issued notes, when neither expecting or intending to pay them on demand, as promised on their face, there is still stronger reasons why they should be held to the strict performance, and to the letter, of a legal and solemn engagement made in (intentional) falsehood, and for the purpose of fraudulently gaining a benefit and profit, for which a part of the promised consideration (the punctual redemption in specie) was not designed to be given.

But it is idle and ridiculous to attempt to represent as alike, and to put on the same footing, the paper currency issued by banks, and other bonded debts. It is an obvious truth that the very life's blood, and source of existence, of a paper-money currency, (which is redeemable, and before it is discredited or depreciated,) is the general confidence in its perfect convertibility on demand to gold or silver. Without such confidence, (or otherwise, the securityship by, and acceptance of them by government,) bank notes could not at first become currency—and without the continuance of undiminished confidence, neither could they remain in circulation, *unless indeed* the ground of confidence had been totally overthrown, by the banks refusing to redeem their notes. Then, indeed, they would continue in circulation; but as a depreciated currency, and because the better currency had been by it expelled from circulation. For any individuals or corporations to gain currency for their notes by securing false confidence, and then to keep them in circulation by totally forfeiting confidence, is nothing better than swindling, and that upon the most extended scale of operations on which swindling has ever been performed. And the law should forbid and prevent, or punish such procedure, and society should condemn, denounce, and treat it as it is, an enormous moral and social offence, even if the main object of both the government and of society were to sustain the policy and the credit of the paper money system. For the only possible chance for sustaining permanently the credit of this system, and thereby gaining the benefits from its successful operation which its advocates believe to be attainable, will be to purify the system, cut off from it at least the manifest and notorious abuses and frauds, and thus, by compelling better conduct, preserve to the banks and to their issues as much as possible of good reputation and ground for claim to public confidence.

If a stranger to the circumstances of this country, in other respects, were to learn its condition as to banking operations and their results, it would be to him utterly uncomprehensible that any people, and much less a free and enlightened people, should submit to be thus ruled, and plundered, and corrupted in morals as much as impoverished, by a system which is beneficial only to a very small portion of the community, and they mostly of the classes who seek to live, and do live and fatten, by depredating upon the property and fruits of the labor of the community. And this worse than Egyptian bondage

of the honest and laborious many, to the dishonest and rapacious few, is submitted to by the suffering community, impatiently indeed, but as if there were no help, no possibility of any remedy or mitigation being afforded. Indeed, a large portion of the plundered and outraged class are so deluded and intimated as to deem the system which oppresses them as their best aid and support. And the operation of this delusion, and the still stronger influence of the power of the banks, have served for many years to render the iniquitous system impregnable, and all assaults upon it to be not only hopeless, but even ridiculous. *But the time has come when this enormous power is tottering, and may be assailed, not only with hope, but almost with certainty of success.* And the enormous excesses and still extending abuses and frauds of the paper money system have alone brought it to this now feeble and vulnerable condition. There is nothing now wanting for its purgation and reformation, but light on the subject, to induce the people to judge and to act, and they will, in a voice of thunder, pronounce the speedy and utter condemnation of this stupendous system of delusion, fraud, pillage, and usurpation. Every individual who thinks that *bank reformation* is needed, should exert his influence, no matter how low he may estimate it, to diffuse information among his neighbors. Associations for promoting *bank reformation* should be formed, and auxiliaries established in every county, to forward the object, by causing the publication, in the cheapest possible form, and spreading before the people, of such papers as will expose the evils and the fraudulent and ruinous operation of the irredeemable paper money system. If this were done, upon a concerted plan of extended operation, and but a few suitable, zealous and active individuals were to commence action in each county of Virginia, it would not be long before they would increase their numbers twenty for one; and with the aid of a very small pecuniary contribution from each member, they would command a treasury that would flood the country with *truth-telling publications* on this subject, on which heretofore almost nothing but falsehood has been sent forth from the press. The gross abuses of the irredeemable paper banking system could not stand a year in Virginia, nor much longer elsewhere, against the assaults of such an organized array of foes. We earnestly urge all of the few who are already fully awakened to the enormity of the evil, to unite on this plan of procedure. Let no man think that he is too weak to forward the great movement. The great body of the people, however ill-informed as yet on this subject, are open to conviction, and ready and anxious to be instructed. Any one zealous asserter and preacher of the truth, by proper exertions, can in a few hours draw to his aid five or ten others, equally influential; and the five or the ten soon could be made fifty or a hundred. A very small contribution only should be required, say a dollar, or even less, so as to enlist as many as possible in the movement; and, if such means were used, it would not even require another general election of delegates to the legislature of Virginia, before that body would know that it was the will of the people that banking abuses should be permitted to proceed no farther.

Farmers of Virginia—mechanics—all who live

by honest labor—will you not make an effort to secure yourselves and your posterity from the enormous and increasing exactions and depredations of this system of fraud and usurpation?

**THE CONDITION OF AMERICAN AGRICULTURE,  
AND THE PROPRIETY OF AFFORDING TO IT  
GOVERNMENTAL AID.**

Extract from the Address of the Hon. Chilton Allan to the  
Kentucky State Agricultural Society.

We will now take a view of the agriculture of our own beloved country, and in doing this, I will enumerate the circumstances that have contributed to its advancement and those which have made against it.

Since the revolution, the repeal of the law of primogeniture—allodial titles, the facility of acquiring portions of our vast territory, and protected industry presented a grand theatre for the display of the productive powers of agriculture, and with these advantages, without aid from government, it has been the chief agent in making the United States what they are. Here has been an expansion of population, intelligence and wealth, which has astonished the world. The disadvantages which have operated against agriculture in the United States are the following:

The original emigrants brought with them a very imperfect knowledge of tillage, the art being then but little understood in the mother country.

The emergencies attending new settlements in a savage land prevented improvement.

The great quantity of land and scarcity of laborers, caused the people to be perfectly regardless of the preservation of the soil. The fashion was to tend corn and tobacco in the same fields as long as they would produce, then throw them away and clear new ones.

In the old states we find thousands of acres that have been thus exhausted and grown up in thick underwood.

In Kentucky, our habits of negligence have been increased by the fertility of our soil; nature having done so much, many of us concluded there was very little for man to do, and it is a melancholy fact that, at this very time, two-thirds of the first cleared fields in the state will not produce half as much as they did at first.

Among the causes that have retarded the progress of our farming, none more deserves our notice than the general passion for large tracts of land. The great length of our rivers, the vast extent of our continent, and the cheapness of wild lands, have given us large ideas, and we have come to measure our wealth by the number of acres we possess. And in this wild career, with hearts of controversy, we lay out all our means in extending our territory. Hence our country now presents so many large tracts incumbered with old logs, brush piles and weeds. It is said there are three elements of wealth—land, labor and capital—this is a bad classification, there is in truth but one element of wealth, and that is labor. Capital is nothing but concentrated labor. The man who lives on the profits of houses, goods and money, lives on labor that has been performed. Land without labor is of no value. It is from the labor and not from the land we derive profit. A

million of dollars laid out in wild land will not bring the owner a dinner or a cent. One acre in good cultivation produces more profit than a thousand that is uncultivated. There never was a greater mistake than the investment of capital in land to lie idle. Let us look at a case in miniature, and the idea can be applied to the whole state.

Of two neighbors having good land, suppose one has kept one hundred acres of his land for the last fifty years under good tillage, while the other has kept a hundred acres of his uncleared, the profits of the one hundred acres under tillage, say is worth \$300 annually, and this annual income is put at such profitable use as that the principal and interest accruing will have yielded 6 per cent. annually; the amount in fifty years would be \$90,416 70; while he of the woodland would have been all the time paying taxes and receiving no profits. If one half the capital that is now invested in land in Kentucky was invested in labor upon the other half, it can be demonstrated by any man competent to make calculations, that the aggregate wealth of the state would be more than doubled. The criterion of the size of farms ought to be this: to have them no larger than the labor employed could keep in the highest state of cultivation. While a farmer has logs and brush, and weeds and worn-out fields in his limits, he should never think of adding. He that has a large tract of land and few laborers, and is living in poverty among thorns and thistles, let him sell half and employ the proceeds in cultivating the other half, and he will grow rich by the change. Our people are sent off to the new states—our school houses are empty from the sparseness of our population, and thousands of children are growing up in ignorance and actual poverty from the vain pride of their fathers to have large tracts of land.

But the great disadvantage under which American agriculture has had to labor, is the neglect of the government. When we have seen that the ancient Egyptian, Assyrian, Persian, Phœnician, Jew, Chinese, and the inhabitant of ancient India, became great and prosperous by bringing the power of government and religion in aid of individual industry in cultivating the earth: when we have seen that all the modern governments of Europe have discovered and are now practising upon this ancient principle of national improvement, is it not astonishing that our national and state governments are the only ones in the world that give no direct assistance to tillage? Our surprise is increased when we read the following words from the last message of President Washington to congress:

"It will not be doubted that with reference either to individual or national welfare, agriculture is of primary importance in proportion as nations advance in population and other circumstances of maturity; this truth becomes more apparent and renders the cultivation of the soil more and more an object of public patronage.

"Institutions for promoting it grow up, supported by the public purse; and to what object can it be dedicated with greater propriety? Among the means which have been employed to this end, none have been attended with greater success than the establishment of boards composed of proper characters, charged with collecting and

diffusing information, enabled by premiums and pecuniary aids to encourage and assist a spirit of discovery and improvement.

"This species of establishment contributes doubly to the increase of improvement, by stimulating enterprise and experiment, and by drawing to a common centre the results every where of individual skill and observation, and spreading them thence over the whole nation. Experience accordingly has shown that they are very cheap instruments of immense national benefits."

What wizard spell—what fatal darkness has blinded the eyes of our public councils so long to the great agency of human prosperity, and to the parting counsel of the father of his country?

Why in the name of the experience of the world are manufactures and commerce more entitled to governmental protection than agriculture? While it is true, that seven-eighths of our population live by agriculture, is it not strange, passing strange that, in a country possessing free institutions, it is also true that, from the foundation of our government up to this time, there cannot be found, either in the statutes of the state, or the nation, the word agriculture; while it is true that the national code from 1789 to 1836 is replete with provisions for the protection of manufactures; while it is true that our commerce in every place on the globe is under the shield of national power, is it not strange, that it is also true, that there never has been appropriated, either from your national or state treasury, one dollar for the direct encouragement of the *art of husbandry*.

The question of domestic manufactures has occupied the widest space in the public attention. Behold the power of commerce! From 1816 to 1836, for repairs and increase of the navy we have expended \$22,000,000; during the same period the whole naval establishment cost \$66,000,000. At this expense, our nation, very properly, has made the stars and stripes wave over every ocean and upon every sea, for the protection of our commerce.

Reference to a single recent historical fact will illustrate the ascendent power which commerce has acquired over the councils of our country, and the sleepless vigilance with which it is guarded in the most remote parts of the earth. In the year 1831, the merchant vessel *Friendship* from Salem, was captured and plundered on the pepper coast of the island of Sumatra. After the capture of the *Friendship*, Capt. Endicot, her commander, told the islanders that he belonged to a great nation on the other side of the globe, that would, before the end of twelve months, send a big ship to punish the outrage that had been committed upon him. They laughed at the idea of the existence and power of the United States. The news of the capture of the *Friendship* was brought to our government. The powerful ship *Potomac* happened just at that time to be ready for sea, and she was forthwith despatched to avenge the outrage which had been committed upon the commerce of the United States. Time rolled on; the twelve months had nearly elapsed; the 13th moon was nearly at hand, in two days more the pirates should hail the anniversary of the capture of the *Friendship*. All but a very few were deriding the idea of the threatened visitation of the big ship; yet they could not dismiss the ominous threat from their minds. On the morning of the

7th of February, 1832, just forty-eight hours before the expiration of the twelve months, the sun rose on Sumatra; and, behold! there stood, sure enough, the terrible big ship! They saw, in the stars and stripes, as they floated on the breeze, the fate of the pirate and the murderer. Their forts were stormed, and their town laid in ashes; and such a terrible impression made of the power and justice of the United States, that since that time, the smallest American vessel can float in safety in these remote piratical seas.

Thus, it was to protect an inconsiderable branch of our commerce, upon the opposite side of the world, that a national ship circumnavigated the globe, in a voyage of four years doubling the Cape of Good Hope in going out, and that of Cape Horn in coming in, at the cost of probably a million of dollars. If the national mind, if the national resources, could be brought to bear thus directly on agriculture, what glorious results would follow! The expense of this single expedition would have established an agricultural college, with an experimental farm, in each of the states, and made educated, practical farmers of thousands of poor orphans.

But why has it happened, here in a free land, where farmers constitute seven-eighths of the whole population, that the arts and commerce have been able to monopolize the resources and legislation of the country, while not one hour is ever devoted, by our public functionaries, to the consideration of agriculture? These are the reasons:—Those devoted to manufactures and commerce have been able, from their concentrated position, to act together in organized concert; and concert has enabled them to bring into their service the public press and public men. They have been able to bring to bear upon public opinion, all the means of popular instruction; while those devoted to agriculture have been dispersed over the continent, from Maine to Louisiana, and from the Atlantic to the far west, each man in comparative solitude, relying upon his individual efforts, without the means of communicating with his brethren of the same class. Having no union, this mighty, unembodied, disorganized interest, acted not at all upon the public councils. But the spirit of the age will overcome this difficulty. Most of the states have already made agriculture the subject of legislation; societies are every where springing up; public journals, devoted to the art of husbandry, are multiplying; able men, in all parts of the union, are addressing the people in their primary assemblies; light is shed abroad among the farmers, and the time has arrived when those who pay nine-tenths of the public revenue, will claim the right to be heard in our public councils.

It will be impossible, in a free land, for the stupid and absurd notion, that the seven-eighths of the people, devoted to the cultivation of the earth, should remain ignorant, while education is mainly reserved for those devoted to the learned professions. It will be impossible, where the ballot box is in the hands of the farmers, for the emoluments and honors of the government much longer to be concentrated in the hands of other professions. It will be impossible, in a free land, for those who pay nine-tenths of the public revenue, to remain much longer quiet, and see annual thousands squandered in local and trivial legisla-

tion, while the great basis on which stands the public prosperity, is wholly neglected.

There is but one thing needful to make agriculture in Kentucky the surest road, both to wealth and fame; and that is, to raise the standard of education among the farmers. When this is done, our educated young men will not all crowd the learned professions, but will soon find that the occupation of a farmer is more sure than any other, to lead to competency and honorable distinction. Whenever the opinion shall prevail, that the cultivation of the earth gives greater scope for the exercise of a highly cultivated mind, than any occupation in the world, the landed interest will learn its true power. It will have its statesmen and orators every where, in primary assemblies, and in legislative halls, to defend and protect its interests. The vast elemental power of agriculture will then be brought out of that chaos, in which it has been so long buried, and shaped into system.

Behold the millions of minute streamlets, issuing from the sponges of the Alleghany and Rocky mountains, without any apparent connexion! Yet, by-and-by, they form themselves into a thousand noble streams, and these thousand unite their mighty volumes of water in the Father of Rivers, which pours his resistless floods into the ocean! So shall the scattered, and, at present, apparently disconnected interests of the farmers, from the Atlantic to the far west, and from the great Lakes to the great Gulf, be formed into a union that will rightfully and safely control the destinies of America, and perhaps of the world.

This enlightened interest will not seek, in the least, to depress the favor which manufactures and commerce have in the government, but to place their mother, agriculture, one step above them. Then agricultural colleges, experimental farms, geological surveys, reports on productive industry, and premiums for new and improved implements, will occupy the time of congress, and the state legislatures.

We have seen, that all the eminent states of antiquity made agriculture the chief care of their governments. We have seen all the modern nations of Europe lie in poverty and ignorance, and despotism, until they discovered that God had connected the virtue, and intelligence, and property of mankind, with the cultivation of the earth: until they discovered that the power and resources of the government must act directly on the subject.

The question may be asked, in the promotion of agriculture, what should be left to individual industry, and what should be performed by the government? I answer, whatever individuals can do, they will do, better than the government. But whatever the interest of the whole people requires should be done, and which is beyond the means of individuals, should be performed by the whole people, through their government.

The industry and finances of France were in a wretched condition; the nation in poverty and ignorance, until that country happened to have a great king and a great minister; they saw what was the matter. Henry IV. and Sully applied the remedy; they applied the funds of the government to raise agriculture; and by stimulating a single branch of industry, they raised France to opulence. They gave bounties for raw silk, and

for rearing mulberry trees. The result is, that besides the supply of her own vast consumption, she annually exports \$25,000,000 worth of silk. Thus by the application of a small premium, which no one felt, the prospects of France were changed. The silk culture gave an easy and pleasant employment to millions of indigent people, and created a vast home market for all the products of agriculture, and changed the habits of the people from indolence to activity.

It is now agreed that America is better adapted to the culture of silk than Europe or Asia; and it is perfectly certain, that judicious legislation would introduce it into these states, to the saving of the drain of \$20,000,000 of specie, which we annually send to the east for that article. In our own time, and within our own observation, the industry, finances and powers of the world have been revolutionized by the culture of a single plant, (cotton.) Russia was unknown among the civilized nations, until the government of that country, by bounties, induced agriculturists from other nations, to settle in their dominions. In 1783 Catherine II. established schools, and as early as 1793, Russia became an exporter of grain to the amount of millions of bushels. There are now Americans in Russia conducting farming operations on a large scale. Before the power of the Russian government was brought in aid of individual industry, in the promotion of agriculture, there were but a few fishermen's huts on the Neva, where now stands the most splendid capital in the world.

Sweden was a semi-barbarous and half-starved nation until Charles XII. made agriculture an affair of state policy, and established agricultural colleges.

Agriculture was in a very low condition in Austria, until the sovereign of that country discovered the true basis of legislation; and to make the proper impression upon her subjects, of the importance of agriculture, she caused medals to be struck and distributed among them, containing this inscription, "*The art which nourishes all other arts.*"

The government of England has incorporated agricultural societies, and endowed them with ample funds—geological and agricultural surveys are made—an analysis of all the soils, with the best modes of improving them, and reports descriptive of all the modes of industry and implements used, are made at the expense of the government, and England derives an income of annual millions, by supplying the world with her surplus live stock.

The distinction which I take of what should be left to individuals, and what should be performed by the government, is plain. The very many things connected with agriculture, which the public interest demands, and which is beyond the power of individuals, will readily occur to the mind of every reflecting man. But above all, it is not in the power of individuals to make adequate provision for the education of the people. From all past indications, it is not at all probable, for a long time to come, that we shall be able to bring into practice any efficient plan of general education, unless we can connect it with agriculture. The great, invaluable end to be accomplished, by the joint action of the government and individuals, is the education of the children of the state.



We do not desire exuberant harvests to fatten men, as mere animals. The value of man is developed by kindling the spark of divinity within him. It is computed that there are 150,000 children in the state; and of this number only 30,000 are receiving a tolerable education. Is not this view enough to make the patriot's hair stand erect!

Our political institutions vest political power in the hands of the majority; if that majority should become uneducated and ignorant, they will of course lose all knowledge of the principles of our government, and all desire for just and equal laws; and, just as sure as God rules the heavens, and punishes men for the neglect of duty, in the long run our liberties will perish by misguided ignorance. If we do not make the education of the rising generation an affair of state, our descendants, at no distant day, will, in the first place, be plundered of their property, through the forms of the ballot box, at the instigation of agrarian demagogues; and next, they will take shelter in the arms of despotism, as a protection from the violence of mobs. It is difficult to convince some men that the intelligence of the people ought to be considered public property, and the only shield of our possessions. They cannot readily see the deep interest they have in the education of other people's children. They do not reflect that they have the same interest in the virtue and intelligence of the voters, upon whose voice at the ballot box depends the existence of the laws and constitution; that they have in the virtue and intelligence of the judge who has to decide upon their title to their houses and lands, in court.

The lesson taught us by the fathers of our institutions, that these institutions have no other foundation than the virtue and intelligence of the people, is not an idle saying. There is no dodging the question. The instruction of youth must be made an affair of state, or the American experiment will turn out to be a splendid failure.

But again, we do not desire fields waving with rich products for the mere gratification of animal appetite. The end and aim of all the efforts of man is happiness; and happiness is certainly more connected with the good cultivation of the earth than any other occupation. Man, as he came from the hands of his Maker, was placed in a garden adorned with every fruit and flower, because these, above all created things, were the elements of that pleasure most agreeable to a pure mind. And now, where are the retreats of happiness in this world, comparable to well arranged houses, clean yards, and well cultivated gardens? Look abroad, and wherever you see shackling fences, burry fields, ducks and geese in the springs, hogs rooting up to the doors, and cattle depredating upon corn hid in the weeds, you will find the men in grog-shops, and the children without school-houses, and their mothers in misery. On the contrary, wherever you see highly cultivated fields, a yard of green sod, orchards of choice fruit, and gardens of select flowers, you will find intelligence, virtue and happiness.

We therefore regard agriculture, not only as the great primary interest of man, in relation to the supply of his wants, but as the source of his most elevated pleasures, and as the only sure basis of his liberties and civilization.

I have satisfied myself, by much observation

and reflection, of the truth of the following statements:

1. That at least two-thirds of our arable land is annually becoming poorer by unskilful husbandry.

2. That it is practicable to make our lands annually more fertile.

3. That both our arable and pasture lands can be made to produce twice as much as they have done.

4. That, at inconsiderable expense, the cattle in our state can be made worth annually upwards of \$4,000,000 more than they have been.

5. That with the same amount of food, our swine may be annually advanced in price \$2,000,000.

6. That there is yet in use among us, in a large part of the state, very imperfect agricultural implements.

7. That two men, with the best ploughs, can perform more work in a day, than three with those in common use.

8. There having been no analysis of our soils there is consequently general ignorance as to the best modes of enriching our lands by mixing different soils together.

If these views approximate the truth, it is evident that there is a wide field for the action of government and societies.

What has been done within a few years, proves what is yet in our power.

The tax value of the lands of the state is \$127,122,509. No man of observation will doubt that at least half of this value has been added in the last twenty years by improvement in agriculture. Inquire of the citizens of Shelby, Henry and Montgomery, and they will tell you that the value of their lands has been doubled in the last twenty years, by the example of a few skilful farmers settling among them.

There are 490,618 cattle taxed in the state, their average value is but \$5.87, while the average value of those in three counties that have improved their stock, is \$15.

The aggregate value of the whole is but \$2,882,218; but if all the counties had given the same attention to improving the stock as Fayette, Bourbon and Clarke, the aggregate value would have been \$7,359,195.

The experience of the few counties that have given their attention to swine, has demonstrated that the improved breeds can be brought to maturity upon half the food required by the old sort.

A proper rotation of crops on exhausted fields has restored them to their primitive fertility.

Is it not an object worthy the attention of law makers, and of good men in all ranks of society, to widen and extend those improvements that have already so enriched a part of our state; and shown that agriculture, properly understood, is the most lucrative occupation among us!

If the people will form themselves into societies, and patronize agricultural journals, collect useful facts and publish the results of their new experiments, and bring the products of their industry into competition at public fairs,—if the legislature will come with the aid of its influence, and provide an agricultural college with an experimental farm, and give a few hundred dollars annually in the form of premiums for the best modes of



cultivation, and for the best essays, and best ploughs, a new spirit of inquiry will arise in the land, the occupation of the farmer will ascend to its proper station. There will be a new diffusion of intelligence, and annual millions will be added to the productive industry of our state.

HALESWORTH FARMERS' CLUB. MARCH 26,  
1841. SECOND ANNUAL REPORT.\*

From the London Farmers' Magazine.

Your committee have great pleasure in presenting their second annual report of the proceedings of the Halesworth Farmers' Club, and they have followed the plan adopted in the first report: viz.—to notice briefly all the subjects discussed in the club during the past year, with short statements of the arguments used for and against.

*First monthly meeting, April 24th.*—This being the first meeting after the annual dinner, the yearly business of the club was gone into. At this meeting it was agreed, that the chairman should become a member of the Royal Agricultural Society, on behalf of the club; a set of rules were drawn up and agreed to, for the management of the library; and a number of subjects, suitable to the agricultural operations of the different months, were fixed upon and adopted by the members present. Sweepstakes for the different roots were entered into; and the important question, as to "whether the corn laws should be considered eligible for discussion in the club," was put from the chair, and carried at once in the affirmative—that question being considered more as a protective than a political question.

*Second monthly meeting, May 23d.*—*Subject*—"On the advantages to be derived from preparing timber by Kyan's process, as applicable to agricultural purposes." The member who introduced the subject gave striking proofs of the preservative powers of this process, and expressed his conviction of the very great advantages to be derived from its general adoption in preparing timber. He produced at the meeting, specimens of the ends of hop-poles, some of which had been subject to Kyan's process before having been fixed in the ground, while others were put in without

any preparation. These hop-poles had been inserted in a stiff soil for nearly two years, and the result was, that the poles which had been kyanized were sound, while the others were in a state of decay. Others who had also used this process, spoke with confidence of its preservative powers: and the chemical effect which takes place in kyanized timber was fully explained to the meeting; when, after several general remarks, the following resolution was agreed to.

*Resolution.*—The subject—"On the advantages to be derived from employing Kyan's process for the preservation of timber for agricultural purposes," having fully occupied the attention of the meeting, and many gentlemen having spoken of the efficacy of the process, the members present strongly recommended it as worthy of general adoption; as, from specimens produced at this meeting, there is no doubt of its great usefulness, particularly in the preservation of soft or inferior kinds of wood: but as time alone can test the value of the process, it is requested that gentlemen who have tried it, will at some future time report the result of their various experiments to the club.

*Third monthly meeting, June 19th.*—At this meeting, judges were appointed to decide upon, and arrange the conditions of the sweepstakes, to be given for the best roots to be produced at the monthly meeting in November. *Subject*—"The best method of preventing the turnip fly." On this subject opinions were greatly divided: many members were inclined to attribute the prevalence of this insect to the manure employed, and many examples were given which tended to support this view; but other members advanced the following reasons in opposition to this opinion:—first, that in numerous instances, the fly abounded where no manure had been used for the turnip crop; secondly, that this insect has been found repeatedly upon long summer-lands; and thirdly, that under the impression that farm-yard manure might have something to do with the increase or production of these insects, rape-cake was used instead, and yet the crop was cut off. One member placed great reliance on ploughing the land two or three days before sowing the turnip seed; but in reply to this, another stated that he had repeatedly tried the plan without effect. Several examples were adduced of the curious fact, that in consequence of sowing seed on part of the field in the morning, and after a few hours sowing the remaining part in the afternoon, the difference of a few hours in putting in the seed saved the plants in one part, whilst in the other they were eaten off—the cause of this could not be satisfactorily accounted for. After an interesting debate, the following resolution was adopted:

*Resolution.*—"The best method of destroying or preventing the turnip fly," having been fully discussed by this meeting, it is considered, that as the subject is involved in great obscurity, both as regards the origin of this destructive insect and the means of preventing its ravages, no particular plan appears worthy of general adoption; and as different members have promised to make several experiments, it is recommended to wait the results, which are to be reported to the club at the end of the turnip season.

*Fourth monthly meeting, July 17th.*—*Subject*

\* We present the following extract not so much for the value of its matter, as to exhibit an excellent mode of working for agricultural societies. The procedure of this English society, though more methodical, and reported according to a certain form, is very much like that of the weekly agricultural meetings held in Boston, which we have before so much applauded, and recommended for the imitation of other meetings or societies. This plan of having intelligent and practical farmers to meet together, and talk upon certain designated subjects for discussion, and then correctly reporting and publishing the opinions expressed, would be at the same time the most easy and agreeable mode of communication, and the most useful to the public. Nor should these conversation discussions supersede any other existing business, but be merely added to all others.—ED. F. R.

—“*The advantages or disadvantages of mowing wheat.*” The meeting was but thinly attended: the members present, however, discussed the subject with much spirit; and although a considerable difference of opinion prevailed, yet the feeling was decidedly in favor of the advantages of mowing wheat. But the general views of the members are embodied in the resolution.

**Resolution.**—The subject—“On the advantages or disadvantages of mowing wheat,” having been fully taken into consideration, the opinion of this meeting, as far as can be obtained from a limited experience, is decidedly in favor of mowing, for the following reasons: viz.—greater expedition and less expense as regards the work; a great advantage in the extra quantity of straw obtained; and the probability of being enabled to cart the corn sooner. An objection having been made, that mowing wheat may affect the interests of the laboring classes, it is believed that such is not the case at present. But further experience is still necessary before all the advantages of mowing can be fully obtained; and circumstances ought always to be taken into account in adopting either the plan of mowing or reaping.

August being harvest month, no meeting took place.

**Sixth monthly meeting, September 18th.**—**Subject**—“*The comparative value of the different varieties of wheat. The best preparation of the land for the reception of the seed. The proper quantity of seed per acre. With the comparative merits of drilling or dibbling in the seed.*” The importance of this subject, and its being divided into several branches, gave rise to a very animated and lengthened discussion. The member who introduced the subject considered, that the great object of farmers should be to find out what particular varieties of wheat are best adapted to particular soils, so that the greatest advantage might be obtained from seed and soil being suitable for each other;—that his observations must be confined to an experience of several years, on mixed and light soils only;—that for those soils, he considered Talavera wheat a most valuable kind; for not only does that wheat prove advantageous to the farmer in its produce, but is highly approved of by millers and merchants, and commands the first price in the market, being of a fine color and very heavy; it also stands the winter better than any other kind. He had also tried the Eclipse wheat, the Tunstale, the long-straw white wheat, and the improved golden drop.

The Eclipse wheat did well for a year or two, but it proved a tender wheat; and although of good color, yet was deficient in weight.

The Tunstale is a good wheat on land in a high state of cultivation, but not at all adapted to poor land.

The long-straw white wheat appeared not to yield well, but this kind was tried for two years only.

The improved golden drop is a very fine wheat; gives a good length of straw, and is very hardy; and is also very heavy and thin-skinned, and of course a favorite with most millers.

\* That is, substituting the grass-scythe for the sickle, or reap-hook. Our cradle is not used in England.

—Ed. F. R.

The introducer also noticed the other points of the subject at considerable length.

The opinions on these and other varieties of wheat were various; some members preferring the Tunstale to all other kinds; on the contrary, with others, the old fine red was a favorite wheat; and there was a new variety, called the Rumburgh prolific red wheat, shown to the meeting, which was stated to combine in a high degree, quality, weight, produce, length of straw, and great hardihood.

As regards the preparation of the land, some difference of opinion existed, and much practical information was given to the club by the members present, as to their particular views with regard to fleet and deep ploughing, and the comparative merits of drilling and dibbling. The sense of the meeting was summed up in the resolution.

**Resolution.**—Much valuable information having been given to the meeting on “The comparative value of the different kinds of wheat—the best preparation of the land for the reception of the seed—the proper quantity of seed, and the comparative merits of drilling and dibbling;” it was considered, that as regards the selection of the seed, great care should be to adapt the different varieties to suitable soils. The Talavera and improved golden drop appear valuable varieties for light and mixed soil lands; and the Tunstale and old fine red wheat and golden drop for heavy mixed soil and heavy land. That as regards manure, rape-cake, from a fourth to a third of a ton per acre, will prove a valuable auxiliary to farm-yard manure. With respect to ploughing for wheat, medium or fleet ploughing appears to answer best. The quantity of seed per acre depends so much on the condition of the land, and time of depositing the seed, &c., that no positive quantity can be given. And as to drilling compared with dibbling, the expense of each mode is so nearly equal, that the one or the other plan may be adopted or not, according to circumstances; but that the advantages in time and quantity of produce, appear to be in favor of drilling.

**Seventh monthly meeting, October 18th.**—**Subject**—“*The best plan of feeding farm horses, during the winter months.*” Much diversity of opinion prevailed on this subject: one member considered bean-meal or pollard as the best food during winter, with Swedish turnips in the spring. Bean-meal was objected to by others as a heating food, causing horses of a certain age to throw out humours. Steeped barley (where price is not an objection) with hay and cut stuff, was highly spoken of; all cut stuff was approved of by some, on the ground of economy; and objected to by others, as likely to prove in the end injurious to the horses, from being swallowed without sufficient mastication. One gentleman of great experience, whose horses are fairly worked, adopts the following plan;—a bushel of oats, with about half a hundred weight of chaff or cut stuff, and one hundred weight of hay or clover per week, for each horse; sometimes three pecks of bean-meal are substituted for the oats. Another gives four bushels of bean-meal with cut stuff, or chaff, and a proper proportion of hay or clover, to four horses in the week, during the working season. When the heavy work is over, he does not give so much corn, but substitutes beet and Swedes.

The propriety of tying up horses in stables was noticed, and approved of by some, but disapproved by others, who considered horses did better in well-sheltered yards; but all agreed that stables ought to be well ventilated.

The resolution conveys the general opinions of the meeting.

**Resolution.**—The subject having been fully considered, the impression of this meeting is, that oats or bean-meal, and a due proportion of hay and straw, cut into chaff, with hay or clover in the rack, is the best plan that can be generally adopted. That a proportion of roots may also be given in the spring, to economize the provender; but that great latitude should be given, as circumstances are so very different with many feeders, that what would be an economical plan with one, might be the reverse with another; individuals must act, therefore, according to the situations in which they may be placed. As few farmers appear to have taken the pains to ascertain the exact quantity of food used per horse per week on the average, it is recommended that a statistical account of the quantity, quality, and average price of the food of a horse, for a given time, shall be kept by horse feeders, so as to come to a clear general estimate of the expense.

**Eighth monthly meeting, November 13th.**—The show of roots took place this evening, with a very full attendance of members. The roots were generally large and of superior quality, and attracted much attention. The judges—Mr. S. Robinson, of Henstead; Mr. R. More, of Leiston; and Mr. John Cooper, of Westleton—awarded the prizes of the different sweepstakes to the following gentlemen:—

Red or purple beet, Mr. John Tillott, Wissett; yellow beet, Mr. Freeman, Henham; Swedish turnips, Mr. John Tillott, Wissett; white pudding turnip, Mr. James Johnson, Halesworth; white loaf turnip, Mr. A. Carman, Wissett.

The judges after clearly explaining the grounds of their decisions in regard to the comparative merits of the different roots exhibited for prizes, congratulated the meeting on their very superior size and quality, particularly as the season had been so unfavorable to the root crop in general. They also called the attention of the meeting to some very superior roots which several gentlemen had kindly sent to the show, although not candidates for the sweepstakes. The judges also went into the comparative merits of the different kinds of roots, their fattening properties, and their suitability for particular soils. Among beet, the old red with a green top, the ram's horn, bullock's, and the yellow, were mentioned as worthy of particular attention by the farmer. White pudding turnip on light soils, for early feeding, and purple pudding, for late feeding, were especially recommended.

A vote of thanks was given to the judges for their services, and the evening passed off with great satisfaction to all.

**Ninth monthly meeting, December 11th.**—**Subject**—*On the different kinds of sheep;—those considered to yield the largest profit;—and the manner of breeding and feeding, as applicable to this district.*—The member who introduced the subject considered that, as respects the particular breed of sheep, every thing must depend on the soil as regards choice; for the kind of sheep suit-

ed to one kind of land, would not pay on land of a contrary description. For example: Southdowns are suited to heaths, and the Norfolk sheep are a very valuable kind on light soils. It had been contended by many, that heavy lands are not calculated for sheep; but by folding sheep in yards, they may be kept to great advantage on farms of this description.

In the feeding of sheep, as a general rule, the better they are kept, and the more carefully they are attended to, the better they pay. Sheep require great care, particularly in dry summers, when they suffer much from heat, flies, and also from want of water, with which, at such times, they should be carefully supplied, as the grass is not succulent enough to afford them a sufficiency of moisture. The popular notion, that sheep require no water, is a very erroneous one, and has led to much loss in dry seasons.

A cross between a Norfolk and Southdown, and between a Down and Leicester, he considered as amongst the most valuable breeds for this district. Another gentleman, of great experience as a breeder, allowed that these crosses were fine sheep, but not equal to the pure Down for this part of the country. Both these crosses consumed more food in proportion than the Down. Great errors frequently prevailed in regard to superior size; the rule ought to be taken in respect to the expense of rearing and the expense of food of the different breeds, and under this view the Down was the most valuable sheep.

In feeding sheep, great care should be taken that they are not subjected to frequent and sudden changes from a rich diet to a poor one; and the contrary, from a poor to a full diet; as these changes have occasioned great losses. Rock salt is most valuable in preventing rot and other diseases to which sheep are subject. In the use of turnips as a food, the rule ought to be to clean and cut them, as they go much further by this plan, and do not scour the sheep, which dirty roots are apt to do. Folding on pastures and feeding with corn, is an excellent plan. Folding in yards is objectionable, as liable to cause foot-rot; for though less food is consumed, yet the sheep do not increase in weight in proportion to the quantity of food consumed. Crosses are objectionable to breed from; pure-blooded sheep are decidedly preferable, as crosses soon become deteriorated.

After these gentlemen had given their opinions, a most interesting discussion took place amongst the members present, as to the advantages and disadvantages of the various breeds—the best method of keeping them through the year—the number of sheep which can be kept upon a farm of a certain acreage, &c. Upon these and other points, several members, particularly the gentlemen who introduced the subject, debated with great spirit, and supported their respective views with great ability. The meeting ultimately came to the following resolution.

**Resolution.**—The subject,—"On the different kinds of sheep,—manner of breeding and feeding, as confined to this district,—and the breed of sheep generally considered to yield the largest profit," having been fully discussed, and having excited much interest, the members present considered that the breeds calculated to afford the most profit in this district, both in wool and carcase, are the half-bred Norfolk and Southdown,

the pure Southdown, and a cross of the pure Leicester and pure Southdown; but the selection of either of the above breeds must depend on the kind of soil the sheep are put on, and the nature of the food they are put to.

As regards feeding, the plan of folding sheep, both on arable and pasture lands, and giving them roots and corn on the latter, was considered preferable to allowing them to range over the fields promiscuously. It was also recommended to place rock salt in their troughs, which has been found to act beneficially on the health of sheep, in keeping them free from diseases generally, especially the rot. It is also essential, in dry seasons, that sheep should be regularly supplied with water; and that turning them out to feed when the dew is upon the layers and pastures, is safer than to turn them on after the dew is off:—the exceptions are, in case of white frost, and low lands, when the sheep ought to be kept in until the ground is dry. Care should be taken also not to change sheep too suddenly from low to high feeding; and a frequent change of food appears necessary to the health of this animal.

#### ON HIVING BEES.

Many are trying experiments on the management of bees, and this is all well, provided we can have accounts of all the failures which have attended new modes. Some have buried their bees in the earth to preserve them from winter frost—some have stowed their hives away into their cellars, and others into their garrets. Some build nice bee houses to protect the hives, while others prefer to set them on posts or on the wood-pile unprotected from the weather.

Within a few years a new plan has been adopted—hives have been placed in a dark room or chamber, six feet square, to prevent their swarming, and to induce the bees to build around the hive, whence the honey may be taken without killing the bees. But none of these plans seem to succeed so well as the old one of letting each swarm have a hive by itself, and a post by itself to stand on. It is agreeable to the nature of the bee to send forth new colonies, and no plan which we have seen tending to check this propensity has succeeded.

Bees sometimes swarm in the fore part of May—we have known good swarms to come out as early as the tenth. They usually start between the hours of ten and twelve, and they generally alight on some bush or tree near the mother hive. It was formerly a custom for one to hold an empty hive under the swarm, while another rapped the limb on which it hung, and when the great body of the bees had fallen into it, to turn it right side up and set it on a platform.

But a much better method is to place a platform under the swarm, and set the empty hive right side up, on the platform, raising the hive by means of chips high enough to let the bees crawl under; then give the limb on which they hang a hard rap, and let them drop on to the platform close by the hive. If that is sweet and dry the bees will go in. No hive should be made wet either with rum, molasses, honey, or any other liquid. The instinct of the bee teaches

it to seek a dry habitation, and swarms will very often leave a wet one after they have entered it.

#### NOTES ON THE SANDY POINT ESTATE.— NO. II.

To the Editor of the Farmers' Register.

*Sandy Point, 15th May, 1841.*

In my former communication, "Notes on Sandy Point Estate, No. 1," a short and general description of the estate was given. I will now, as opportunity offers, endeavor to give a statement of such improvements as are in progress and contemplated. Up to the early part of the past year, (1840,) the various divisions of the estate were under the management of separate overseers. One residing on the Neck farm, one on the Upper Quarter and Rowe, and one, aided by a young man, on Teddington, whose duty it was in the absence of Mr. Bolling to take a general superintendence of the whole, to transmit his orders to the others, and to keep up with him all correspondence necessary for the management of the estate. Each of these had under his immediate orders, care and control, an adequate number of negroes, horses, oxen, &c., for the performance of the labor on the division of the estate committed to his care. Whatever might have been the advantages arising from this division of labor, the expenses, inconvenience and frequent misunderstandings incident to such an arrangement, much more than counterbalanced them, and rendered a junction of the several divisions, with all their laborers into one, a desirable object. Consequently, when it became necessary to discharge the overseer residing on the Upper Quarter and Rowe, early in March, the laboring forces on these farms were added to those of Teddington. And early in the fall of the year when the services of the overseer residing on the Neck were also dispensed with, the desired junction of the whole was accomplished; all of which are now under my immediate management, aided by two young men. Considerable difficulty was for some time experienced, in procuring the services of young men of suitable habits, but eventually we succeeded. So far, the advantages resulting from thus uniting the whole have, I believe, been satisfactory. For the present year our crops are nearly and unavoidably as much detached as when the several divisions of the estate were under the management of separate overseers; or thus, 200 acres of the Neck farm are under corn, 285 acres on Teddington and 115 on Upper Quarter, in all 600 acres.\* This division of the crop, could not easily be avoided, and is necessarily attended with some inconvenience, but which will terminate with the present year; and in future the estate will be cultivated as follows: the Rowe farm

\* In stating the number of acres as above, the amounts are taken from old surveys, or what have been the reputed contents for years past, and is believed to be nearly, if not altogether correct. A measurement of each will shortly be made, and should any difference then present itself it will be noticed when the results of crops will be subsequently referred to.

of 536 acres, the Neck farm of 600 acres, and 600 acres of Teddington farm, will each form one field, cultivated on the three-shift system of corn, wheat, clover: 100 acres of the Teddington farm divided into five fields, will continue to be cultivated on the five-shift system of wheat, clover, corn, wheat, clover, or one 20 acre lot in corn each year. The Upper Quarter farm of 536 acres, will be divided into four fields of nearly equal area (134 acres) to be cultivated in 1st, wheat, 2d, corn, 3d, wheat, and 4th, clover, or one half in wheat, one fourth in corn, and one fourth in clover each year. Under this system, in 1842, all of the Rowe farm of 536 acres will be in corn, together with the 134 acres, or one-fourth of Upper Quarter, one 20 acre lot on Teddington. To this will also be added 30 acres of adjoining and more recently reclaimed land on Teddington, in all 720 acres. In 1843, the corn crop will comprise all of Neck farm of 600 acres, 134 acres of Upper Quarter, and one 20 acre lot on Teddington, in all 754 acres. In 1844 the corn crop will comprise 600 acres of Teddington, together with one 20 acre lot, and 134 acres on Upper Quarter, also equal to 754 acres. In each of these years all of the corn land will be sown in wheat or oats, together with 134 acres or one-fourth of Upper Quarter after clover fallow, and one 20 acre lot on Teddington also after clover fallow. In order to prepare the Upper Quarter farm for the intended four-shift system, one fourth of it now in wheat is sown in clover for fallow in 1842, and the one-fourth of it which comes into fallow this season, has a portion of it sown in oats, the residue to be sown in peas, both intended to be ploughed under, as a preparatory manuring. There will consequently be three different rotations on the estate, a three-shift, of corn, wheat, clover, a four-shift of wheat, corn, wheat, clover, and a five-shift of corn, wheat, clover, wheat, clover. These various shifts are not adopted in consequence of any particular difference of soil, but more especially for ascertaining from actual results, on soils as nearly alike as possible, which of the rotations will eventually be the most profitable.

To complete the junction of the horse teams on the estate, since the new arrangement, Mr. Bolling has had a stable recently fitted up capable of containing all of them, or having accommodations for 40 horses. The stable is under the care of an old man, aided by a boy, whose business it is to clean it out thoroughly, at least once a day, and carefully to litter each stall. The horses are fed with corn at morning and noon, and at night with cut oats and fodder; these it is also the duty of the old man and his assistant to prepare and put into the boxes or feeding troughs, previous to the horses coming in at night, so that their respective drivers shall have nothing to do but to unharness their horses, halter, and have them properly curried and cleaned. The horses when at work on parts of the estate remote from the general stable, are accommodated at noon for feeding by stables formerly existing on the separate divisions; to which are added the additional convenience of having stoutly made boxes or troughs, sufficient for feeding all the horses, and which can be moved to any point in a wagon or cart. Communicating with the stable is a house, divided into three compartments, one of which is fitted up as a har-

ness room, where harness of every description must be deposited in its proper position every night, and so kept when not in use, and where it can at all times be seen at a glance. The door of this is locked, and is under the immediate care of the head ploughman, whose duty it is to report all cases of breakage, losses, or want of necessary repairs. Another apartment is for the depositing of all small implements, such as hoes of various descriptions, spades, shovels, forks, &c., when not in actual use. The door of this is also locked, and under the immediate care of the head-man of general work. And the third and largest apartment is for depositing all ploughs, harrows and other large implements when not in use. These apartments are found to be very useful appendages; the want of which is a serious inconvenience on many farms, and on an estate of this extent they are indispensable.

Material is also now being prepared for the erection of a stable, to contain sixty stalls, for the better accommodation of our working oxen: hitherto they have been kept after the general mode adopted in lower Virginia, that is, after working all day, they are turned at night into a yard having a temporary shelter, where their food is scattered for them over the yard, and which they must pick up as they best may. The disadvantages attending this, at best, most slovenly mode of feeding, are I think very obvious, and to the highest degree unjust to the patient, hard-working and valuable ox, and is a fruitful source of loss, disappointment and vexation to his owner. The ox cannot move a foot without trampling his food into the pile of underlying manure, and before he gets half satisfied, the food supplied to him becomes utterly unfit for use, particularly in wet or snowy weather; and from the generally limited extent of shelter afforded him, he is compelled to pick up his soiled and filth-impregnated food exposed to all kinds of weather. By this mode of feeding the strongest and most vicious animals, are always sure to secure to themselves the lion's share, such as it is, to the serious detriment of their weaker and continued weakening neighbors. Add to these sufficiently serious inconveniences, the frequent casualties which occur from their goring and maiming each other, as also the immense waste of food accruing from this most wasteful mode of feeding, which, in a season such as this has proved to be, has been a source of most serious inconvenience to many farmers, and consequent privation and suffering to stock of almost every description. By adopting the mode of stalling his working oxen, Mr. Bolling anticipates that most of these inconveniences will be obviated, that a great saving of food will be effected, while the animals will be kept in much better condition, and at all times fit for efficient services. He will also, at all times, have the full benefits of complete shelter, with a dry comfortable and clean bed; their stalls will daily be carefully cleaned out, and fresh litter supplied; and while they enjoy all the advantages of shelter, care will be taken to have the stables properly ventilated. By increasing the efficiency of this valuable stock of animals, it is also anticipated that a considerable reduction of their numbers may be effected, and thereby derive another source of profit. I am well aware that many consider the stalling of cattle as not being suitable

as a general rule in this country, and that there may be objections urged against the practice. I have had some experience in both modes, of yarding and stalling cattle, and am decidedly of opinion that stalling for working oxen, and milch cows, is the preferable mode. For young stock, when there is no demand made either on their labor or produce, yarding is probably the better mode; and if well and plentifully littered, with a good supply of sound food, they may pass through an ordinary winter season well. But it is far different with animals that have to work hard all day, and whose hours for feeding and rest are necessarily limited. In connexion with the stable will be erected a chaff house, and an open stable for colts. Ample lots will extend over the whole, for receiving every species of provender for the stock; the horse stable, barn, machine house, chaff house, colt stable and ox stable, will form the sides of a square enclosing the manure yard, with a straw yard in the rear. A pump-room, root-room, and boiling house, will also be erected in a convenient location, as also a shade of sufficient extent to receive all carts, wagons, &c. The whole will form a very convenient range of farm offices adapted to the wants of the estate.

By this new arrangement of the formerly existing divisions of the estate, the extent of fencing will be reduced not less than 10 miles; of itself a most important saving, estimating the cost of cutting and mauling rails at 33½ cents per hundred, 10 miles of fencing would cost not less than \$2,200; and if the value of timber used, hauling of rails, erecting of fence, and waste of ground so occupied by the fences were valued at the low rate of as much more, the whole cost would amount to \$4400. And supposing these fences, of pine rails, required to be renewed every sixth year, (and every fifth would be nearer the truth,) the annual cost would be \$733.33 without calculating the yearly interest of money so invested.

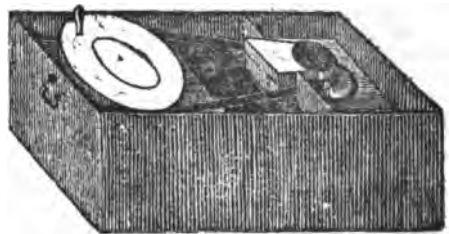
Leisure does not permit me to extend my notes farther at present, but I will again resume them at an early date, and am, most respectfully, your humble servant,  
A. NICOL.

#### THE PATENT FAMILY FREEZER.

We have received, from a gentleman of New York, a present of an apparatus of his invention, for making ice cream more easily, quickly, and with less labor, and much less ice, than in the usual clumsy and troublesome mode. We have had it tried; and allowing something for the usual awkwardness of a new process, or use of a new machine, we are satisfied that it will well perform its designed purpose. Even with the help of the annexed figure, it will not be easy to describe the freezer so as to be understood. It will give us pleasure to show it to any one who may desire to see it.

An ordinary wooden chest contains, and serves as a frame for the whole. A deep and narrow

cylindrical tin vessel, nearly of the form of a common freezer, and which will hold nearly two gallons, is set with its bottom on a pivot, on which it will turn freely, and has a band around its top, and which passes also around a horizontal wheel. The turning of that wheel (which a child can do easily,) keeps the tin vessel in a rotatory motion, as fast or slow as is desired. The vessel is sustained in its position at top by pressing against two small friction wheels. It is set in a pail, which is so little larger as to leave only about an interval of an inch in thickness between the inside of the pail and the outside of the tin vessel, to receive the pounded ice and salt. A peck of ice is enough to fill the space—and a peck and a half is as much as we both used and wasted in the whole operation. Thus the preparing of this delicious summer refreshment is made much more easy, quick, and also more cheap, in every respect, except for the cost of the machine, which is \$15—and that is too much to be paid by families that do not make ice cream frequently. But to those who do, and especially to confectioners, and keepers of public houses, the price of the machine would be saved, and the expenditure prove a profit, in the course of a few months. The mode of operating is thus described in the letter of the gentleman who invented the machine.—E.D. F. R.



"The object of the contrivance, you will observe, is simply to turn the tin vessel, or freezer, and at the same time leave the top open, so as to have access to the contents. The arrangements are made with a view, also, to economize in the quantity of ice and salt, to prevent either of these ingredients from getting accidentally into the freezer, and to produce the desired result in a short space of time, and without much labor. If you will take the trouble to let the first operation be performed under your own inspection, and by the following directions, you will judge how far I have succeeded. Any person will understand that the pail must always be placed precisely in one position, which indeed can hardly be placed otherwise, there being a section of a circle cut from the boards under the friction wheels to receive the top of the pail. The pan also will show that it must stand directly under the centre of the large hole made for the purpose, and to fit the pail. The use of the pan is to prevent the ice and salt

from scattering about when filling the pail. The screw, (which you will insert in the end of the box,) is to pull the wheel back when the band becomes too loose. Make the band just tight enough to turn the freezer; if too tight, it will turn harder, and wear the friction wheels unnecessarily. As my machine professes to do nothing more than to freeze the cream where every thing else is prepared, in order to make a fair experiment, it will be preferred to have the ice and salt at hand, the former broken small, and the smaller the better. The cream, or custard, should be prepared in time to cool before it is put in the freezer. All this is necessary in any mode of freezing.

"Now as to the quantity of salt and ice. You will see that the pail will contain but a small quantity of ice, so inconsiderable as not to be worth naming. And one quart of salt is abundant. Rock salt, or the refuse of beef, pork, and fish barrels will do. It will be well when pounding the ice, to provide a box of some kind for that purpose, and as an empty soap or candle box can be found in every family, no one need be at a loss; and no implement is better, or more readily procured for pounding with, than a common smoothing iron, which may be used without at all injuring the face of it.

"We will now suppose the cream to be in the freezer, closed with the tin cover. First throw a little of the most finely pounded ice in the bottom of the pail, and sprinkle some salt on it. (Do not put in so much as to prevent the freezer from going down to its place.) Then put the freezer in the pail, taking care that the socket stands upon the pin or pivot. Stand the pail in the box, covering it with the zinc pan, turn down the friction wheels, and fasten them with the hook, and adjust the band. All this will not occupy one minute. Then fill the pail with pounded ice sprinkling salt in during that operation. You may now let it stand a little, or turn it slowly until the ice melts (a little,) and allow the cream to get near the freezing point. Then settle the ice with a stick and fill up the pail as before. Now remove the tin cover, and introduce the large spoon, holding it lightly with its edge against the side of the freezer. Moving it at the same time slowly up and down, which will remove the frozen cream from the sides, and mingle it with the more liquid parts. As the cream becomes thicker and thicker, the resistance offered by the spoon will of course increase, and the wheel will turn with more difficulty. Then cease turning for a moment until the operator forces the spoon from the top downwards, to remove the hard frozen cream from the sides, and also from the bottom; then turn again for a minute or two, and apply the spoon as last mentioned, until you have finished. Then slip the tin cover on, putting the handle of the spoon through the hole in it, left for that purpose, and let it stand until wanted, and to harden. All this may be done with ease in thirty minutes, (I do it in less.) You need not take the spoon out of the freezer (at all) until you serve up the cream.

"It will be seen from the construction of the freezer, that the contents cannot be turned out in one mass or lump, but must be removed by spoonfuls, which is the more genteel method, unless a pyramid be desired, and in that case, a

suitable form must be provided, into which the frozen cream is to be forced and then turned out. In the first machine I made, the neck of the freezer was made to slip on like a cover, with the view of turning out the cream into a body, and although very nicely fitted, the centrifugal force, when turned rapidly, made the cream fly out at the top in considerable quantities. There was no remedy but the plan now adopted."

From the Louisville Journal.

#### AN ACCOUNT OF THE MODE OF CULTURE ADOPTED IN RAISING A CROP OF TURNIPS WITH LIQUID MANURE.

For which the medal of the Highland Society was, at the last December show, awarded to Mr. John Prentice, manager of the Caledonian Dairy.

After the separation from the ground of the white crop which generally precedes fallow, it is the first of the preparatory measures towards another crop to give this a furrow about the end of autumn. This is too commonly done in a careless manner, as being unworthy the care bestowed where the seed has to be sown without any spring ploughing, and almost always with too shallow a furrow. This is done under a notion that by leaving the roots of those grasses and weeds, with which the field may be infested, near the surface, the winter frost will destroy them. This notion is erroneous, for frost does not destroy these roots; their natural position in the soil is near the surface, and the frost often penetrates much deeper without doing them any injury. They can be destroyed in the ground only by burying them out of that connexion with the air which is necessary to their existence. This may partly be effected by ploughing deep, late in the fall, which also deepens the staple of the soil and brings the under soil into contact with the air and the winter frost, by which it is ameliorated.

The field in which the turnips were raised was, in conformity with the above remarks, ploughed deep. It laid in this state throughout the winter, and was harrowed in March, previous to the commencement of applying the urine. The barrel employed contained half a ton. Behind the barrel was a box crossways for the equal distribution of the urine, which covered a space six feet broad. Each barrel served in length forty-eight yards, which, at two broad, made sixty per Scotch acre, or thirty tons per acre of manure. The sources from which the liquid was drained afforded only five barrels per day; consequently considerable time was occupied in going over six and a half acres. During the time, the field received a ploughing in the first week of May; then part of the field was irrigated before ploughing, and part after. It was drilled at 30 inches, and sown with redtop yellow turnips. A few days elapsed after drilling, for this reason: in a new made drill that part of it which receives the seed is formed of the sun-baked particles of soil from the surface forced into the centre from either side, which, if allowed to lie for a day or two, imbibes from the surrounding soil the moisture, and makes a better receptacle for the seed. One road in the middle of the field was manured from the cow-house at



the rate of 23 tons per acre, to afford a trial of the value of the urine. They came up with a most beautiful uniformity after the urine, not one inch of the drill weaker than another; that after the dung was in tufts, arising from the difficulty of each part getting a fair proportion in quantity and quality of dung in the beginning of December. The day before the show equal portions were taken up, and weighed, but there was no difference in weight, which was at the rate of 36 tons per acre. Those from the urine were more uniform in size than those from the dung; which characteristic they had kept from the time of their coming up to their gathering.

The result of the trial justifies an opinion, already entertained by the writer of this, that the urine has not as a manure been held in that estimation that it ought to have been. When cattle are much on green food, it forms one-fourth of the whole manure, as in the case above cited, where it was equal to this portion; the dung otherwise being 7 tons. From the fact ascertained by the above experiment, that its effects are not destroyed by early application, it can be laid regularly on as made; or should the field on which it is to be laid not be ready it can be stored by having it absorbed in dry earth, and then carted to the field.

#### REMARKS ON THE GEOLOGICAL SURVEY OF THE EASTERN SHORE OF MARYLAND.

To the Editor of the Farmers' Register.

I see, by a late communication to the Register, that a bank of accessible marl has recently been found in Somerset county. When Professor Ducatel made his geological tour of the Eastern Shore, he came to some hasty conclusions; and among others, that there was no accessible marl in Dorchester, Somerset and Worcester counties. The true state of the case was, none had been found; and I suspect but little search has been made. What does not appear, does not exist, is a sound legal maxim, but very erroneous in geology. I have no knowledge of marl here rising to the surface of the earth. Most of the marl beds have been discovered by accident; and a gentleman of my neighborhood, a few days since, showed me a specimen of rich shell-marl, which had been washed out of a bank on his estate by the late heavy rains.

The geological discoveries of Professor Ducatel have been of small value, but to him I impute no blame. When his office was established, Maryland was about to plunge deeply in the system of internal improvements, and perhaps the projectors thought a geologist a means of rendering their system popular, by amusing the natives. The legislature provided no means for prosecuting works of discovery, and all that the geologists could do, (I speak of our own shore,) was to ride from county to county, and collect by information materials for an annual report to the legislature. The state of New York is now engaged in examining her territories, by digging and boring. Steel, iron, emery, marble and other valuable fossils have been discovered. If the legislature had placed at the disposal of the geologist a body of laborers, there is good reason to believe some

valuable discoveries would have been made. We have, in several parts of the Eastern Shore, indications of iron ore, convenient to navigable water; and the disclosure of marl alone would have been of more advantage, than all the profits, direct and derivative, promised by the internal improvers to Eastern Shore men.

I think Professor Ducatel has, in his late report, stepped out of the line of his avocation, by recommending the extension of the canal from Cumberland to Savage River, a distance of thirty miles. In the true spirit of an internal improver, he makes a small estimate of the costs, and a large calculation of the profits. For internal improvements Maryland has now upon her a debt of fifteen millions of dollars. They have become a nauseous dose to the people. The waters of Datchet Mead were not more odious to Sir John Falstaff.

AGRICOLA.

*Eastern Shore, Md., April 12, 1841.*

#### THE COTTON GIN. AMERICAN INVENTIONS.

From the Baltimore American.

An article in a late number of Hunt's Merchant's Magazine gives a brief history of the cotton plant and of its rapidly extended cultivation in the United States.

The state of Georgia, it appears, was the first in the Union to begin the cultivation of cotton. The plant itself was indigenous to this continent, and cotton fabrics were worn very generally by the Mexicans at the time of the invasion of that country by Cortez. But the culture of cotton did not become general in any of the North American colonies while they remained subject to Great Britain. The first exportation of the article took place in 1784, eight bags having been sent to London. This small lot was seized by the British custom house officers under the belief that cotton was not a product of the United States.

The inventions of Arkwright, Watt, and others, by which machinery and steam power were applied to the manufacture of cotton, caused a new impulse to be given to the cultivation of the plant. But the invention of the cotton gin by Whitney, in this country, constitutes perhaps the most important era in the history of this useful commodity. Before that event the process of disengaging the seed from the fibre was altogether by hand, and of course very tedious. The planter was limited in the quantity of his crops by the necessity he was under of raising no more than he could prepare for market by the slow operation of picking out the seeds, one at a time.

When Whitney had constructed his first cotton gin, great excitement was produced among the planters as soon as a knowledge of the fact got abroad. The building in which he had secluded his machine to keep it secret until he could procure a patent was broken open by the people of the neighborhood, and the plan of the invention ascertained. It was in Georgia that the first model was made, and very soon machines copied from it were in operation throughout the state. Whitney resorted to litigation to recover his just rights; but he found it very difficult to prove that his machine had ever been used in Georgia, although the clatter of some of them could be



heard in the court house where the suit was pending!

When Arkwright set his spinning frame in operation, the populace broke into his establishment to destroy it. They wished to prevent its introduction and use, under the idea that it would throw manual operatives under the old system out of employment. In Whitney's case similar violence occurred—but the object of it was not to destroy, but to multiply and perpetuate the happy invention which promised to substitute the labor of machinery for the labor of human hands.

#### ON THE USE OF NITRATE OF SODA AS MANURE.

From the London Farmers' Magazine.

In the year 1840, being determined to follow up my experiments more minutely, and also to prove or disprove an objection which had been started against the use of nitrate, to the effect that it was an impoverisher of land, or at best a stimulant to inert tillages—I again tried it on a rood out of the centre of the acre which I had sown with nitrate in 1839, on the thin *scopy* gravel land, and manured the remainder of the field with an excellent dressing of good manure, say 20 yards per acre. The nitrate was put on at the rate of 2 cwt. per acre. The manure was got on and well dressed in early in the season—the nitrate was put on the first of May. On the eighth day of May, no rain having fallen from the time of sowing the nitrate, I was walking past the field with an old experienced farmer, (Mr. T. Jennings,) who had that season retired from agricultural pursuits with the strongest prejudice against the use of such a slight and *new-fangled* dressing, when I directed his attention to the field, and inquired if he could perceive any difference in the appearance of the grass; when, knowing I had used nitrate in the field, he replied, No. I then directed his attention to a part of the field farther from us, and his observation was that I wanted him to see my land on which the nitrate had been used, and say that it had the advantage over the manure, but that he was not to be caught; for if there were a part of the field looking better than the rest, it was a small plot in a contrary direction. I desired him to point it out, and he directed me to the nitrate. I informed him the nitrate had been used there, but he would not be satisfied until we had been into the field, and found the larger particles of nitrate still undissolved on the surface, when from that time until the time of cutting the grass and storing the hay, he was a constant visitor and observant watcher over the nitrate, and he assisted me in measuring 64 square yards out of the nitrate piece, and an equal quantity out of the best of the manured land, and when weighed green gave the following result:—Grass cut 26th day of June—weight of grass from 64 yards of nitrate land, 338 lbs.; ditto from 64 yards of manured land, 252 lbs.; being rather more than one-fourth in favor of the nitrate. Anxious to know whether the grass grown by nitrate was more succulent than the other, I had both pieces made as dry as possible, put into two small cocks, and covered with thatch. On the 14th of July, or eighteen days from the time of cutting, the day

being fine, I had the cocks broken out under my own superintendence, and exposed them to the wind and sun until evening, when I had them weighed, and found the nitrate grass wasted from 338 lbs. to 88 lbs., being little more than one-fourth the original weight; and the manured grass from 252 lbs. to 66 lbs., being also little more than one-fourth the original weight. Having done this, I found no great difference in the waste of one lot over the other, but I gained the knowledge that the nitrate hay was neither more nor less than 1 qr. heavier than the manured hay. Weight per acre from manure, supposing the whole as good as was the trial piece, 2 tons, 4 cwt., 2 qrs. 7 lb.; and from nitrate, 2 tons, 19 cwt., 1 qr. 19 lb. The above is the last of my experiments; and so fully am I satisfied with the success of my own trials, that this season (1841) I shall use nitrate of soda on 20 acres of grass land, and would recommend such of my friends and the public generally, to whom a cheap dressing is of any consequence, not to be carried away by any thing that I have written on the subject into an extravagant use of this, in my humble opinion, wonderful *fertilizer*; but first test it on a small scale, and if found to answer, it will then be for them to choose whether they will use or refuse its assistance."

#### VEGETABLE AND ANIMAL NUTRITION.

Being the substance of a lecture delivered by Mr. James Allen Ransome, at the Royal Victoria Gallery, Manchester.

Mr. Ransome commenced by stating, that at the last meeting, in introducing the subject of vegetable and animal nutrition, he had alluded in general terms to the nature of the materials employed as elements, or as engaged in the first processes of nutrition. He had remarked, that man, although an omnivorous animal, was yet ultimately dependent upon the vegetable kingdom for his nutriment; for the flesh meat he took as food derived its nutriment from the vegetable creation; so that man is dependent, directly or indirectly, upon the vegetable kingdom, for the materials which constitute the aliment from which his own frame is to be formed. This, then, led to the consideration of the materials composing the vegetable kingdom; and he had shown experimentally, that a simple vegetable product—sugar—contained three elements in a state of combination—carbon, oxygen, and hydrogen, which were the three principal elements entering into the composition of vegetables. But he had prepared them to look for other elements, in order to complete the series. They next considered from what sources these respective elements were derived; and after a short review of the notion that carbon, their principal constituent, was derived from *humus*, or, as it was also called, *humin*, or *humic acid*, he had ventured, on the authority of Professor Liebig, the celebrated German chemist, to show that much doubt might be entertained on this subject, and that it was more reasonable to suppose that, instead of carbon being derived from *humus*, it was derived from one of the constituents of the atmosphere, for carbonic acid was found to constitute one-thousandth part of the weight of the

air. From experiments which bore some analogy to the process of vegetation, he had shown that a much greater weight was taken up by chemical substances, having an affinity for carbonic acid, than was required for plants growing in the same time; without denying the use of *humus*, or the ingredient constituting vegetable mould, which exists in almost all good soils. In connexion with the subject, he had shown, that, if we examine the constitution of plants, we shall find almost every one of their elements, such as woody fibre (*lignin*), starch, sugar, tannic and tartaric acids, and the essential oils, contain less oxygen than carbonic acid, with which the air furnishes them; and, consequently, that, in the act of taking them in, oxygen must be given out. He had mentioned this, in reference to the main question—the maintenance of the purity of the atmosphere, for if we suppose, from the respiration of man and animals, and the combustion of immense quantities of carbonaceous matter (amounting, perhaps, to thousands of tons in this town alone,) that the quantity of carbon in the atmosphere had gone on increasing, and that of oxygen decreasing, and that thus, after a given time, the materials of which the atmosphere is composed would become unfit for the support of life—we should see that, by this beautiful arrangement, the decomposition of carbon and the giving out of oxygen, the purity of the air was constantly maintained; and that the direction given to the winds by different temperatures also tended to equalize the purity as well as the temperature of the air throughout the globe. He had shown, that we need not look very far for the sources of hydrogen and oxygen, inasmuch as oxygen might be taken in as a constituent of the air, or might exist as a constituent of water, in combination with hydrogen, and hydrogen is necessarily taken in from the water, which is abundantly provided for plants both in rain and in the dews which occur in the absence of rain. We will now (continued Mr. Ransome) proceed to a consideration of what other materials are found to be contained in plants, and, in fact, found to be essential to their growth. But we have still one other substance to rank with those already considered—nitrogen or azote, the fourth principal element of plants. Some are disposed to think that this does not enter materially into the composition of a plant, except in the case of some poisonous plants, or those which possess strong medicinal qualities; but a few words only are necessary to show that, unless plants did contain this element, animals could not derive much nutriment from them. It has long been known, that if dogs are fed upon pure sugar, which is acknowledged to be nutritive when mixed with other things, they fall into a kind of consumption, lose flesh and strength, and ultimately die with symptoms of emaciation and decline. Sugar is one of those substances which contains no azote or nitrogen. On the other hand, we have whole tribes of men and animals who live upon nothing but vegetables; yet the bulk of their muscle or flesh contains a large proportion of azote. Whence can that be derived, unless the food they take contains a large portion of it, or we consider man as possessing the power to assimilate the gaseous elements around him? But the fact is, they do not take in azote from the atmosphere, and they

would die unless they were provided with something as an aliment containing azote. We shall see that, although sugar and starch exist in the leaves of plants, yet every particle is surrounded by a thin lamina, of a substance which contains azote, and it is owing to this that many changes take place spontaneously, or by means of the root. The simple operation of fermentation takes place from the gluten, which contains a quantity of azote, reacting upon the sugar which it invests; and we shall see many instances in which chemical changes are effected through the instrumentality of the azotous principle which accompanies the other more truly vegetable principle. A computation was made by Boussingault, a French chemist, that hay contains one hundredth part of its weight of azote. Hence we see the source of the nutriment of cattle fed on grass. Wheat contains even a larger quantity; and, in proportion to the nutritious quality of the wheat, shall we find the greater quantity of azote. And upon this depends the practical application of chemistry to the art of culture,—viz. the providing a plant with substances which will give out azote to it; for such is the difference in wheat, that some only contains  $3\frac{1}{2}$  per cent. of gluten, whereas other wheat, provided by the care and foresight of the farmer, with proper composts, has this quantity of  $3\frac{1}{2}$  per cent. of gluten increased tenfold, or to 35 per cent. We also find, that if a horse, for example, be fed upon potatoes (which it will eat readily enough,) it is unfit for its work, and loses strength, and spirit; because the potato is a plant which contains but little azote. In the East Indies people live very much upon rice, which contains but little azote; and, in order to get a fair proportion of this principle, they have to take a larger quantity of food. It is singular enough, that one of the articles in daily use in most families should be a substance containing a large quantity of azote—viz., coffee. The *caffeine*, or active principle of coffee, contains more azote than almost any other known body. I was in hopes to have exhibited before you this evening a few proofs that some plants contain azote; but unfortunately it has very intractable qualities; and, though it would put out a light, it would not display any very active properties. The form in which it is best known in combination is that of ammonia, or the gas which is the pungent element of the salts contained in the smelling bottle.

Ammonia is known to contain a certain proportion of azote, represented by the formula  $N^1, H^3$ , or one proportion of nitrogen or azote, with three proportions of hydrogen; and these two, combined in these proportions, constitute ammoniacal gas. This gas is formed under many circumstances, in the decomposition of vegetable and animal substances, and in the elimination of hydrogen; and therefore we may naturally expect, that, from the immense masses of putrifying matter upon the surface of the earth, the relics of former generations, ammonia must be given out, into the atmosphere. Most of us were struck with the very small proportion of carbon or carbonic acid found in the air, only one-thousandth part of its bulk; yet I showed you also, that when coral reefs are formed in the ocean by myriads of animalcula, these little animals contrive to abstract from the water sufficient carbonate of lime, to form future islands; and yet the quantity of lime in sea-water

amounts to only the 12,400th part of its bulk, and iodine is contained in salt water in the proportion of one millionth. The air itself contains 79 per cent. of free azote, about 21 per cent. of oxygen, and one-thousandth of carbonic acid; but, unless we provide azote for plants in some other form than that in which it exists in the atmosphere, it is useless. That form is ammonia; and in that form we must look for it in the air, as required for plants. If we take a jar full of atmospheric air, and look for ammonia in it, most of us will be disappointed, the quantity exists in so small a proportion. By recent calculations, Liebig found that every cubic foot of air contains only a quarter of a grain of ammonia: Liebig has, however, found it in the air. Ammonia is a highly volatile substance, at an ordinary temperature existing as a vapor; but if that vapor comes in contact with water, the water absorbs it so rapidly as almost to produce an explosion. Liebig conceived the idea, that if we wish to search for ammonia, we must look for it in the water which falls from the air, and by so doing has found it, as I have done, by repeating his experiments. Liebig took 100 gallons of rain water; he applied heat, and distilled over four or five pints; he saturated it with acid, so as to fix the ammonia; evaporated it, and it left crystallized muriate of ammonia. It appears, however, that our air in Manchester is rich in ammonia; for instead of 100 gallons, we had only to use 10 gallons; and from the first pint distilled, Mr. Neild and I succeeded in procuring this quantity of ammonia [exhibiting a quantity crystallized in a glass]. It is natural to expect, where so much coal is burned, and where there is so large an accumulation of human beings, that if ammonia is to be found at all, it is in Manchester. We see, therefore, that the atmosphere will provide for plants a quantity of ammonia, and so small as is the quantity entering into the composition of a plant, it is sufficient for the development of those principles which are requisite to the nutrition of the plant. If one pound of rain water contains only a quarter of a grain of ammonia, then a field, having an area of 14,000 square feet, must receive annually upwards of 80 lbs. of ammonia, or 65 lbs. of nitrogen. This is much more nitrogen than is contained in the form of *albumen* or *gluten*, in 2,650 lbs. of wood, in 2,800 lbs. of hay, or in 200 cwt. of beet-root, which are the usual products of that surface. It also happens, that the quantity of ammonia thus brought down by rain, after a drought, is larger than ordinary. In summer, a thunder shower after a drought is very likely to bring down, in the first part of the shower, a large proportion of ammonia. Liebig took different portions of strata of snow, and found the larger proportion of ammonia in the lowest stratum, which of course fell first. The sensation of greater hardness in rain water (felt on washing the hands) than in distilled water, is owing to the quantity of ammonia which rain water contains as compared with distilled water. We have next to consider how this ammonia appears in plants, or whether it appears at all. Of this there is abundant evidence presented in the evaporation of the juice taken from the stem of the maple tree, which is generally saturated with lime, for the purpose of throwing down the gluten it contains, and the presence of the lime causes a disengagement of

the gaseous ammonia sensible to all about. In the manufactories of maple and beet root sugar, this escape of ammonia is very strikingly experienced; indeed this circumstance is one of very serious loss to the beet-root sugar manufacturer; for the ammonia given off, leaves behind it an acid salt which prevents the sugar crystallizing, and causes considerable loss by reducing the sugar to a treacly state, in which only a portion, instead of the whole, can crystallize. The products of the distillation of flowers, herbs, and roots, with water, and all the extracts of plants for medicinal purposes, contain ammonia. The tobacco leaf contains ammoniacal juice; the juice of the cut vine also gives off ammonia. In connexion with these facts, we may allude to some articles which the farmer employs to increase the fertility of his land. Most of the composts used are rich in nitrogen, particularly bone-dust, crushed bones, and the shavings of horn, being parts of dead animals; but there are also other substances, which, when thrown over the field, increase its fertility, simply because they combine with the ammonia which comes down in rain water, and deprive it of its azote. Gypsum, or the sulphate of lime, is extensively used, and, when applied to a meadow exposed to alternations of wet and dry weather, causes it to produce abundantly; but it is found not to answer upon a dry meadow; and the reason is, that when rain falls, if carbonate of ammonia exists in the air, and comes into contact with gypsum, it is converted into carbonate of lime, and the ammonia is disengaged and absorbed into the soil. The next shower dissolves a portion of it, which passes down to the root of the plant, and is assimilated by the plant itself. Many soils contain ammonia. If you take a piece of common pipe-clay, and moisten it with a strong alkali, you perceive at once a smell of ammonia given off which will even continue for a couple of days. Other aluminous earths retain ammonia. Burned clay is often used by farmers to apply to their land; and burned clay is now found to absorb and retain ammonia. The ferruginous earths (those which contain an oxide of iron) also retain ammonia; and one of the most solid of these oxides, the *hematite*, or red oxide of iron, a stone, contains one per cent. of this gaseous principle. It is from these facts—now for the first time explained by Liebig—that the materials used by the farmers prove beneficial in their application to the land. *Humus* is a spongy body, which absorbs ammoniacal gas to a considerable extent; and, with every shower of rain, it gives it out to be taken up by the roots of the plants. Plants, then, derive their nourishment from carbonic acid, ammonia, and water; these being the principal sources from which plants derive the greatest part of their bulk and weight. The plant assimilates to itself these respective elements from carbonic acid, ammonia, and water. In the decay of plants, these elements float to other plants, are again assimilated by them, and thus the destruction of one generation of plants furnishes the materials out of which another is to be formed. The intermediate processes are obscure; but still lights are to be thrown upon them, by analogy, which may form the subject of another communication. Let us now consider what other materials we find in plants. If a plant consisted

merely of the elements mentioned, it would vaporize, be entirely dissipated, and nothing would be left; but very few plants will do this. Some of the elements of plants will do it, as starch, sugar, and the essential oils; but generally we find, that after the burning away of a plant, there is an ash left. In coals, which are but vegetables transformed, we find the value of the coal depends upon the greater or less quantity of ashes left; and this ash we will term the inorganic principle of vegetables. This consists of potash, soda, lime, magnesia, some of the metallic oxides, phosphoric, sulphuric, and other acids, chlorine, iodine, and I need hardly enumerate them all; but there are a number of fixed elements, capable of existing in a solid form, unalterable and unchangeable by heat. (He exhibited a quantity of ashes obtained from burning six ears of corn, after thrashing, and without the wheat; in addition to a quantity of soluble matter, which had been dissolved.) In reading the works of the older physiologists, we meet the statement, "Such a plant contains a little soda and a little magnesia," without specifying proportions, or any stress being laid upon the fact. But more accurate investigations have shown, that there are certain relative proportions between the quantity of these fixed materials and the plant itself; that, in proportion as these exist in the soil or the plant, its development is more or less perfect. If a farmer attempt to grow wheat on a soil containing neither flint nor potash, he may get wheat, but it will not stand, the stems will not support it; because the stalk of wheat contains a species of glass—silica in combination with potash. He would have nothing in the ear, unless the soil were provided with a salt called the phosphate of magnesia and ammonia. This has been tried in the mosses,\* which contain *humus* enough, but without the addition of some compost they never bear. In the tribe of plants called *equisetaceæ*, the stem contains large quantities of silica. The Dutch rush contains so much that it is used for the purpose of polishing; and it is found in large quantities in some tropical plants. The bamboo in some of the joints contains absolute nodules of a substance consisting of 70 per cent. of silica, and 30 per cent. of potash. How came they there? There has been some controversy upon this subject among chemists; and one analysis has been made to show, that it could not be a permanent proportion, inasmuch as two pine trees, which grew in different situations, contained different proportions. Liebig took these analyses, compared them together, and then introduced—triumphantly I think—the principle of equivalents, laid down by our venerable townsman, Dr. Dalton, showing that although the quantities appear very dissimilar, yet in their proportions they are exactly the same, although the data were taken from a hostile source. Two pine trees were taken, one growing on Mont Breven, and the other on Mont La Salle. The first contained potash, lime, and magnesia, and the sum of the carbonates of these amounted to 56.71 per cent. in the ashes; whilst those of the pine grown on Mont La Salle contained 58.55 of these carbonates; but this latter contained only potash and lime. In the first the quantities were carbonate of potash 3.60,

carbonate of lime 46.34, carbonate of magnesia 6.77; in the second carbonate of potash 7.36, carbonate of lime 51.19. So that the one containing no magnesia contained more lime and more potash; and when we examine the equivalents—the proportions required to neutralize an acid—we find them in the one to amount to 9.01, in the other to 8.95, being a difference of only .06 (six hundredths,) a difference of weight which few scales would detect. Liebig took another analysis in which the disproportions are much greater. He took two fir-trees, one growing in Norway, and the other at Allevard, in France. That in France contained potash, soda, lime, and magnesia; the sum of these carbonates was 49.5; while that of the carbonates found in the fir grown in Norway was 51.45; yet these, when reduced to the equivalents in which they combine with acids, were found to be 11.62 and 11.47; from which result Liebig is disposed to infer, that the presence of these elements is not accidental; but that they form a certain proportion, and enter into that proportion in the ratio of their equivalents. Now from what sources are these matters derived? Take a sandy heath, which contains, to all appearance, nothing but sand, and where the most expert analyst will detect nothing else; no *humus* whatever, and, if you attempt to grow wheat upon this heath, there will be no crop. But, if on this heath plants are grown which require but little of the inorganic principle, and these are destroyed either by decay or combustion, it is found in practice that the heath acquires fertility. Take, for example, the Luneberg Heath, in Germany, which is covered with heath-plants; generally, especially the *erica vulgaris*. Every thirty or forty years the practice is to burn down all the vegetable growth on the surface, to let the ashes sink into the ground, and then to sow wheat; and thus these plants, which have, for the space of forty years, been constantly collecting a little of these elements, when burned, contained in their ashes the product of that number of years' growth; which, when returned into the soil, is sufficient for one crop of plants which require a good large proportion of these elements. In the neighborhood of Heidelberg, one of the perquisites of the woodcutters, after felling and clearing timber, is to be allowed to burn the roots, stumps, twigs, and leaves, and to raise one year's produce from the ground. They do so, and get one good crop; for, whatever the trees and plants collect goes on accumulating, and then, by destroying the carbonaceous parts by fire, the inorganic products are returned to the soil, and provide for one year's growth of wheat. Does not this show us what is meant by exhausting a soil? If wheat is grown year after year on the same soil, it is found that the crop becomes less and less productive. And why? Because, with every crop of wheat, so much of the inorganic elements is removed or taken away from the ground; therefore, in order to allow this ground to recover these inorganic elements, it is necessary to resort either to the now exploded (?) system of allowing it to remain fallow, or to a rotation of crops; which, we shall show, will furnish ground with potash and lime. But how does a soil happen to contain potash originally? All soils are formed from the disintegration of the harder rocks; they gradually accumulate in the

\* Peat soils.—Ed. F. R.

lower parts of the country, being brought down by floods and other causes. We must look, then, to the composition of the rocks themselves. Suppose of each of these which I will enumerate, a field of 40,000 square feet (a Hessian acre) of surface, with a depth of twenty inches, were decomposed, the quantity of potash we might expect to find would be:—In felspar, 1,152,000lb.; in clinkstone, 200,000lb. to 400,000lb.; in basalt, 47,500lb. to 75,000lb.; in clay slate, 100,000lb. to 200,000lb.; and in loam, from 87,000lb. to 300,000lb. We also find, that the aluminous or clay earths, contain a large proportion of potash; for we can obtain it not only from pure felspar, but from the granites. The potash these contain is not washed away by every shower of rain; for clay is a very impervious sort of material; and therefore, though the surface may be washed away, the interior still contains a large proportion. Wherever water penetrates, there the soil gives off its potash to the water, and this will be taken up by the *spongioles* of the roots of plants. A single cubic foot of felspar, if decomposed in clay, is sufficient to supply wood of 40,000 square feet, with the quantity of potash necessary for the growth of timber upon it, for five years. Do we not, then, see the use of many of the composts now introduced upon the land? The very dirt collected upon our roads must contain quantities of potash. The gritty portions of this dirt undergo decomposition; it is reduced to the finest powder, and, from exposure to air and moisture, undergoes disintegration; and by this means an abundant supply of potash may be obtained. How does the earth, after being exhausted by the growth of plants, recover itself by lying fallow? It has the double advantage of not only having its *humus* exposed to the air, and converted into a sort of sponge; but the inorganic materials are still further decomposed by the action of the air, and thus become ready to furnish to the next crop the quantity of alkali required. We see that where silica is required as an ingredient in the portions of a plant, it is necessary that potash should exist with it, to render it in some degree soluble. Thus the hard part of the bamboo, and the stalk of wheat, which contains silica, have it accompanied with potash, which assists the silica to enter into a state capable of being assimilated to the plant. There is another beautiful provision in plants, for taking up some of the more insoluble elements, viz., that in one class of plants, the *graminæ*, an acid is given out as an excretion from the roots, producing an acetic fluid, which, entering into combination with alkaline earth, forms soluble elements, and allows them to be taken up by the *spongioles*, and reduces them to a state of assimilation. Plants growing there will assist in the disintegration of rocks more than mere weather will do. But suppose a soil pretty rich in potash, and that the farmer is misled by the desire of making the most of his land in a short time. He grows upon that land plants, which, when they attain their proper growth, are removed from the land, burned, and sold for potash—an article greatly in demand. The plant generally selected for this purpose is the *artemisia*, or wormwood; if he grows it and sells the ashes, and the next year thinks he will have a crop of wheat, he will be disappointed; for he has taken from the soil that very material which is essential

to the welfare of his wheat the following year. Again, it is essential to the farmer to know which of his crops take out the most of this principle, as contained in potash, lime, or magnesia. Tobacco and wheat require pretty much the same proportion of potash at one period of their growth. If the farmer attempts to cultivate the one after the other, the result will be pretty much the same as if he tried to grow two crops of the same plant, in two succeeding years. It would seem from this, if the view taken by Liebig be correct, that it is important the farmer should always know what are the inorganic elements contained in the crops he wishes to have; for these must either be found in, or supplied to the soil; they cannot exist in the atmosphere. He ought next to examine his soil, and see if it contains them. If not, they must be added. Upon this, it seems to me, the important principles of agriculture depend. It is not necessary that each farmer should be himself an analyst; but a number of farmers might unite to procure the services of one; and it is certain that success would follow the application of these principles. The quantity of inorganic elements required by the plant in 100 parts of the stalk of wheat, are 15.5 of ashes. In the same quantity of the dry stalks of barley, 8.64; in 100 parts of the stalk of oats, 4.42; and thus we see, that the same field that yields only one harvest of wheat, might be made to produce two crops of barley, or three of oats, year after year. The illustration of the practice at Heidelberg, of allowing the woodcutters to burn the timber on the ground, will also show how land, which has been covered by forests for years, will, when the forest is consumed, become abundantly fertile. It is owing to this, that the trees themselves require but little alkali in proportion to the grasses; they have been assimilating this for years, and, when they are destroyed by decay or combustion, that ground is abundantly supplied with inorganic products necessary for a crop, and also with a fair proportion of vegetable soil. The common practice with farmers in the rotation of crops is to follow grass with *leguminosæ*, which class of plants contains no free alkali, and only 1 per cent. of the phosphates of lime and magnesia; buck-wheat contains only .09 per cent. These belong to the fallow crops; and the cause they do not exercise any injurious influence on the land cultivated is, that they do not extract the alkalies from the soil, and only a very small proportion of the phosphates. Now, is there not something in all this deserving the attention of agriculturists? They have hitherto gone on blindly; they have arrived at a certain state of knowledge from experience, and it so far a useful guide; but are they possessed of sufficient knowledge of facts connected with this important subject to form a principle and rule, in reference to crops and soils of various kinds, and the order of succession? And when we find a work published by a celebrated organic chemist, Dr. Liebig, in which these principles are developed for the first time in Europe, are they not, I ask, highly deserving the attention of agriculturists? They not only apply to all the articles of our daily food, but to the articles of raw produce which we consume in our manufactures; and, in fact, it seems that culture is not only useful, as supplying our animal wants, but also to lay the foundation of the prosperity of states, particularly of those engaged in

commercial enterprise; and therefore, in the speculations now afloat as to the transfer of the products of one part of the earth to another, it is important to set at rest or establish the principle upon which this must be effected. I do not stand here in order to defend the principles of Liebig, but shall be glad to listen to the experience which any gentleman here has to offer; assuring you, that I have at least as much pleasure in listening to others as in hearing myself.

#### ON DESTROYING RATS.

From the London Farmers' Magazine.

Sir,—The following is a reply to your correspondent's inquiry as to the best mode of destroying rats. Should he find either of these methods succeed, he will oblige by a reply through your paper.

1st—Corks, cut as thin as sixpences, roasted or stewed in grease, and placed in their tracks.

or—Dried sponge in small pieces, fried or dipped in honey, with a little oil of rhodium.

or—Bird-lime, laid in their haunts, will stick to their fur, and cause their departure.

If a live rat be caught, and well rubbed or brushed over with tar and train-oil, and afterwards put to escape in the holes of others, they will disappear.

Poisoning is a very dangerous and objectionable mode. If any of your chemical readers could suggest any very pungent smell, procurable from substances resembling garlic or *asafatida*, this might be of great use, as this animal has an extraordinary fineness or susceptibility of scent; witness its extreme predilection for oil of rhodium, &c. I consider your correspondent's query a very important one, and it is surprising that the attention of farmers and others concerned in the removal of these vermin, has in this age of discovery been so little drawn to the subject; more particularly so, as the newspapers present so many recent instances of attacks made by these creatures on infants, &c.

I really think the matter more deserving of notice than has hitherto been given to it; and, apologizing for the present intrusion, I remain, yours very truly,

A CONSTANT SUBSCRIBER.

Bristol, March 10.

#### ACTION OF LEAVES.

Their nature, structure, veins, epidermis, stomates.—

Effect of light.—Digestion or decomposition of carbonic acid.—Insensible perspiration.—Formation of secretions.—Fall of the leaf.—Formation of buds by leaves.

From Lindley's Horticulture.

A leaf is an appendage of the stem of a plant, having one or more leaf-buds in its axil. In those cases where no buds are visible in the axil, they are, nevertheless, present, although latent, and may be brought into development by favorable circumstances. As this is a universal property of leaves, to which there is no known exception, it follows that all the modifications of leaves,

such as scales, hooks, tendrils, &c., and even the floral organs, heretofore to be described, have the same property.

Considered with respect to its anatomical structure, a leaf is an expansion of the bark, consisting of cellular substance, among which are distributed veins. The former is an expansion of the rind; the latter consist of woody matter arising from the neighborhood of the pith, and from the liber. As the tissue forming veins has a double origin, it is arranged in two layers, united firmly during life, but separable after death, as may be seen in leaves that have been lying for some time in water. Of these layers, one is superior and arises from the neighborhood of the pith, the other inferior and arises from the liber; the former maintains a connexion between the wood and leaf; the latter establishes a communication with the bark. As sap, or ascending fluid, rises through the wood, and principally the album, afterwards descending through the liber, it follows from what has been stated, that a leaf is an organ of which the upper system of veins is in communication with the ascending, and the lower system with the descending current of sap.

A leaf has moreover a skin, or epidermis, drawn all over it. This epidermis is often separable, and is composed of an infinite number of minute cavities, originally filled with fluid, but eventually dry and filled with air. In plants growing naturally in damp or shady places it is very thin; in others, inhabiting hot, dry, exposed situations, it is very hard and thick; and its texture varies between the two extremes, according to the nature of the species. The epidermis is pierced by numerous invisible pores, called stomates, through which the plant breathes and perspires. Such stomates are generally largest and most abundant in plants which inhabit damp and shady places, and which are able to procure at all times an abundance of liquid food; they are fewest and least active under the opposite conditions. It will be obvious, that, in both these cases, the structure of a leaf is adapted to the peculiar circumstances under which the plant to which it belongs naturally grows. Now, as this structure is capable of being ascertained by actual inspection with a microscope, it follows, as a necessary consequence, that the natural habits of an unknown plant may be judged of with considerable certainty by a microscopical examination of the structure of its epidermis. The rule will evidently be, that plants with a thick epidermis, and only a few small stomates, will be the inhabitants of situations where the air is dry and the supply of liquid food extremely small; while those with a thin epidermis, and a great number of large stomates, will belong to a climate damp and humid; and intermediate degrees of structure will indicate intermediate degrees of atmospheric and terrestrial conditions. It is however, to be observed, that the relative size of stomates is often a more important mark in investigations of this nature than their number; those organs being in many plants extremely numerous, but small and apparently capable of action in a very limited degree; while in others, where they are much less numerous, they are large and obviously very active organs. Thus the number of stomates in a square inch of the epidermis of *Crinum amabile* is estimated at

40,000, and in that of *Mesembryanthemum* at 70,000, and of an *Aloe* at 45,000; the first inhabiting the damp ditches of India, the last two natives of the dry rocks of the Cape of Good Hope: but the stomates of *Crinum amabile* are among the largest that are known, and those of *Mesembryanthemum* and *Aloe* are among the smallest; so that the 70,000 of the former are not equal to 10,000 of the *Crinum*. Again, the *Yucca aloifolia* has four times as many stomates as a species of *Cotyledon* in my collection, but those of the latter are about the  $\frac{1}{32}$  of an inch in their longer diameter, large and active, while the stomates of the *Yucca* are not more than  $\frac{1}{320}$  of an inch long in the aperture, and comparatively inert. The *Yucca*, therefore, with its numerous stomates, has weaker powers of perspiration and respiration than the *Cotyledon*.

A leaf, then, is an appendage of the stem of a plant, consisting of an expansion of the cellular rind, into which veins are introduced, and enclosed in a skin through which respiration and perspiration take place. It is in reality a natural contrivance for exposing a large surface to the influence of external agents, by whose assistance the crude sap contained in the stem is altered and rendered suitable to the particular wants of the species, and for returning into the general circulation the fluids in their matured condition. In a word, the leaf of a plant is its lungs and stomach, traversed by a system of veins.

As the leaf is an extension of the rind of a stem, its epidermis is also an extension of the skin of the same part; and hence it is that in plants which produce no true leaves, such as the *Stapelia*, the office of the leaf is performed by the rind and epidermis of the bark.

The functions of respiration, perspiration, and digestion, which are the particular offices of leaves, are essential to the health of a plant; its healthiness being in proportion to the degree in which these functions are duly performed. Consequently, whatever tends to impede the free action of leaves, tends also to diminish the healthiness of a plant.

These functions are performed by means of the vital forces of vegetation, which we cannot estimate or comprehend, assisted by the influence of an external agent, the nature of whose action may be understood from its effects. That agent is solar light.

It is the property of solar light, when striking upon the leaf of a plant, to cause: 1. A decomposition of carbonic acid; 2. An extrication of nitrogen; and, 3. Insensible perspiration. By their vital forces plants appear to decompose water, independently of the action of light.

Carbonic acid is originally introduced into the interior of a plant, either dissolved in the water it imbibes by its roots, or by attraction from the atmosphere, or by the combination of the oxygen obtained by a decomposition of water or otherwise, with the carbon in its interior. When a leaf is exposed to the direct influence of the sun, it gives off oxygen, by decomposing the carbonic acid; whereupon the carbon remains behind in the interior of the leaf in a solid state.\* Al-

though the nature of the air thus extricated can only be determined by a chemist, yet the extrication itself can be easily seen by any one who will plunge a leaf in water and expose it to the sun; for bubbles of oxygen will be seen to form themselves upon the surface of the leaf. But, if the same leaf be observed in the total absence of solar light, there will be little or no extrication of air, and what little is given off will be found to be carbonic acid, which plants exhale at all times in small quantities; oxygen, however, which was before expelled, is inhaled. Hence plants decompose carbonic acid during the day, and form it again during the night, the oxygen they inhale at that time entering again into combination with their carbon; and, during the healthy state of a plant, the decomposition by day, and recomposition by night, of this gaseous matter, is perpetually going on.\* The quantity of

text, but as one of the chemical components of starch, sugar, gum, tartaric or malic acid, organic tissue, or other product of the plant, whether solid or liquid. A. G.]

\* [This absorption of oxygen and recomposition of carbonic acid during the night, might perhaps be left out of the account in a general view of the subject, except as an explanation of the manner in which plants are injured or destroyed by the protracted absence of light. According to the celebrated chemist from whom the following remarks are cited, this process is not at all connected with the life or growth of vegetables, but is entirely chemical. "It is true that the decomposition of carbonic acid is arrested by the absence of light. But then, namely, at night, a true chemical process commences, in consequence of the action of the oxygen in the air upon the organic substances composing the leaves, blossoms, and fruit. . . The substances composing the leaves of different plants being known, it is a matter of the greatest ease and certainty to calculate which of them, during life, should absorb most oxygen by chemical action, when the influence of light is withdrawn. . . Whilst the tasteless leaves of *Agave Americana* absorb only 0.3 of their volume of oxygen, in the dark, during 24 hours, the leaves of the *Pinus abies*, which contain volatile and resinous oils, absorb 10 times; those of *Quercus robur* containing tannic acid 14 times; and the balmy leaves of the *Populus alba* 21 times that quantity. This chemical action is shown very plainly, also, in the leaves of the *Cotyledon calycinum*, the *Cacalia ficoides*, and others; for they are sour, like sorrel, in the morning, tasteless at noon, and bitter in the evening. The formation of acids is effected during the night by a true process of oxidation; these are deprived of their acid properties during the day and evening, and are changed, by the separation of a part of their oxygen, into compounds containing oxygen and hydrogen either in the same proportions as in water, or even with an excess of hydrogen, which is the composition of all tasteless and bitter substances. . . Most vegetable physiologists have connected the emission of carbonic acid during the night with the absorption of oxygen from the atmosphere; and have considered these actions as a true process of respiration in plants, similar to that of animals, and, like it, having for its result the separation of carbon from some of their constituents. This opinion has a very weak and unstable foundation. The carbonic acid, which has been absorbed by the leaves and by the roots, together with water, ceases to be decomposed on the departure of daylight. It is dissolved in the juices which pervade all parts of the plant, and escapes every moment through the leaves, in quantity corresponding to the water which evaporates. . . Plants during their life constantly possess

\* [It remains behind, not in the state of uncombined solid carbon, or charcoal, as the reader unlearned in chemistry might suppose from the statement in the



carbonic acid decomposed is in proportion to the intensity of the light which strikes a leaf; the smallest amount being in shady places; and the healthiness of a plant is, *ceteris paribus*, in proportion to the quantity of carbonic acid decomposed; therefore, the healthiness of a plant should be in proportion to the quantity of light it receives by day.

68. But, while this is true as a general axiom, it is necessary to observe that some plants are naturally inhabitants of shady situations, and are so organized as to be fit for such places and for no others: plants of this description will not endure full exposure to the sun; not because an abundant decomposition of carbonic acid is otherwise than favorable to them, but because their epidermis allows the escape of water too freely by insensible perspiration, under the solar stimulus.

69. The mere fact of plants absorbing fluids from the earth, would render it probable that they have some means of parting with a portion of it by their surface; but that they do perspire is susceptible of direct proof, and is by no means a mere matter of inference.

70. We do not indeed see vapor flying off from the surface of plants; neither do we from that of animals, except when the air is so cold as to condense the vapor; yet we know that in both cases perspiration is perpetually going on, and it would appear that in plants it takes place more abundantly than in animals. If a plant covered with leaves is placed under a glass vessel, and exposed to the sun, the sides of the vessel are speedily covered with dew, produced by the condensation of the insensible perspiration of the plant. If the branch of a plant is placed in a bottle of water, and the neck of the bottle is luted to the branch, so that no evaporation can take place, nevertheless the water will disappear; and this can only happen from its having been abstracted by the branch which lost it again by insensible perspiration. Hales, an excellent observer, devised many experiments connected with this subject;\* among others the following, which he relates thus:—"August 13. In the very dry year 1723, I dug down 2½ feet deep to the root of a thriving baking pear tree, and laying bare a root half an inch in diameter (fig. 7) I cut off the end of the root at *i*, and put the remaining stump (*i n*) into the glass tube *d r*, which was an inch in diameter, and eight inches long, cement-

ing it fast at *r*; the lower part of the tube *d z* was eighteen inches long and a quarter of an inch diameter in bore. . . . Then I turned the lower end of the tube (*z*) uppermost, and filled it full of water, and then immediately immersed the small end *z* into the cistern of mercury at the bottom, taking away my finger which stopped up the end of the tube *z*. . . . The root imbibed the water with so much vigor, that in six minutes' time the mercury was raised up the tube *d z* as high as *z*, namely, eight inches. . . . The next morning at eight o'clock the mercury was fallen to two inches in height, and two inches of the end of the root *i* were yet immersed in water. As the root imbibed the water, innumerable air bubbles issued out at *i*, which occupied the upper part of the tube at *r* as the water left it." On another occasion he planted a sunflower 3½ feet high in a garden pot, which he covered with thin milled lead, cementing all the joints so that no vapor could escape except through the sides of the pot and through the plant itself; but providing an aperture capable of being stopped, through which the earth in the pot could be watered. After fifteen days, viz., from July 3 to August 8, he found, upon making all necessary allowances for waste, that this sunflower plant 3½ feet high, with a surface of 5616 square inches above the ground, had perspired as follows:—

	Ounces. Avoirdupois.
In twelve hours of a very dry warm day	80,
On another day	20,
In a dry warm night without dew	3,
In a night with some small dew	0;

And that when the dew was copious, or there was rain during the night, the plant and pot were increased in weight two or three ounces. Other persons have instituted other experiments of a similar nature, the result of all which is, that the insensible perspiration of plants is very considerable.\* Hales says his sunflower perspired seventeen times more than a man. There is, however, this important peculiarity in vegetable perspiration, that it takes place only or principally in sun-

the power of absorbing by their roots, moisture, and, along with it, air and carbonic acid. Is it, therefore, surprising that the carbonic acid should be returned unchanged to the atmosphere, along with water, when light (the cause of the fixation of its carbon) is absent? Neither this emission of carbonic acid nor the absorption of oxygen has any connexion with the process of assimilation; nor have they the slightest relation to one another; the one is a purely mechanical, the other a purely chemical process. A cotton wick, enclosed in a lamp which contains a liquid saturated with carbonic acid, acts exactly in the same manner as a living plant in the night. Water and carbonic acid are sucked up by capillary attraction, and both evaporate from the exterior part of the wick." Liebig, *Organic Chemistry in its applications to Agriculture and Physiology*, (London, 1840,) pp. 27—33, *passim*; a work which comprises a masterly view of the chemical phenomena of vegetation. A. G.]

\* See Vegetable Statics, London, 1727.

\* The amount of this force is strikingly illustrated by the following circumstances recorded by the late Mr. Braddick. "One experiment I will mention, as it may serve to show the great power of the rising sap in the vine, while its buds are breaking. On the 20th of March, in the middle of a warm day, I selected a strong seedling vine five years old, which grew in a well prepared soil, against a south-west wall; I took off its head horizontally with a clean cut, and immediately observed the sap rising rapidly through all the pores of the wood, from the centre to the bark. I wiped away the exuded moisture, and covered the wound with a piece of bladder, which I securely fastened with cement, and a strong binding of waxed twine. The bladder, although first drawn very close to the top of the shoot, soon began to stretch, and to rise like a ball over the wound; thus distended, and filled with the sap of the vine, it felt as hard as a cricket ball; and seemed, to all appearance, as if it would burst. I caused cold water from a well to be thrown on the roots of the plant; but neither this nor any other plan that I could devise, prevented the sap from flowing, which it continued to do with so much force as to burst the bladder in about forty-eight hours after the operation was performed; the weather continuing the whole time warm and genial,—*Hort. Trans.*, v. 202.)



light. The last experiment shows that, while the sunflower was losing from twenty to thirty ounces of water daily during the day, it lost only three ounces during the night without dew, and that there was no loss whatever if a slight dew were present. Here it is probable that the small amount which was lost at night was parted with by the sides of the garden pot, and that the plant itself lost nothing, for it is in evidence that the perspiration of plants is in proportion to the quantity of sunlight that strikes them, and that in darkness they perspire little or not at all.\* It is no doubt true, that in a dry atmosphere plants will lose their water day and night; but it is equally certain that under such circumstances they will lose very much more by day than by night. They will, however, lose much more by day in a dry atmosphere in a given time, than they will in an atmosphere abounding in moisture.

71. Although perspiration thus appears to be principally excited by the solar rays, and to be in a given plant in proportion to their intensity, yet we are not authorized in concluding that perspiration is not increased or diminished by the medium in which a plant grows. Immersed in water, perspiration is necessarily arrested; in an ordinary atmosphere, it will be in proportion to the quantity of elastic vapor the atmosphere may contain; and it is probable, although there are no experiments upon the subject, that it is increased in proportion to the rarefaction of the air.

72. Since a plant does not perspire at night, and since its absorbing points, the roots, remain during that period in contact with the same humid medium as during the day, they will attract fluid into the system of the plant during the night, and, consequently, the weight of the individual will be increased, as Hales found to be the case. In like manner, if plants in the shade are abundantly supplied with moisture at the roots, they also will gain more than they can lose; and, as this will be a constant action, the result must necessarily be to render all their parts soft and watery.

73. It is evident, from what has been stated, that leaves must derive the food they digest from the earth through the medium of the roots; and that they, while alive, maintain a kind of perpetual sucking action upon the stem, which is communicated to the spongelets. That this must be of a very powerful nature is apparent from the fact, that the smallest leaf at the extremity of the branch of a lofty tree must assist in setting in action the absorbing power of roots, at a distance equal, perhaps, to three thousand times its own length. If this reciprocal action is not maintained without interruption, and if any thing occurs to check it during the period of vegetation, the plant will suffer in proportion to the amount of interruption. For example, if the roots are placed in a warmer medium than the branches, and are thus induced to absorb fluid faster than the slower action of the leaves can consume it, the superfluous sap will burst through the stem and disend its tissue till the excitability is impaired

or destroyed. Or if, on the other hand, a branch is caused to grow in a warm medium, while the roots remain in a very cold medium, the former will consume the liquid sap faster than the latter can supply it, and the consequence will be, that the leaves will die, or the fruit will fall off, or the flowers be unable to set their fruit, from want of a constant and sufficient supply of food. Not that it is necessary for the temperature of the earth and air to be equal, for this does not happen in nature; but it is requisite that they should have some near relation to each other.

74. It is generally, however, believed, that leaves absorb fluid from the air; and their stomates appear well adapted for that purpose, by their position in most abundance on the under side of leaves; and the possibility of recovering drooping or sickly plants, by syringing their epidermis copiously, seems to render this fact almost certain.\* It is, however, thought by some, that leaves have no power of absorbing water, even in an elastic state; and that the renovation of plants by syringing is owing to a diminution of perspiration.

75. It is to the action of leaves,—to the decomposition of their carbonic acid, and of their water; to the separation of the aqueous particles of the sap from the solid parts that were dissolved in it; to the deposition thus effected of various earthy and other substances, either introduced into plants, as silex and metallic salts, or formed there, as the vegetable alkaloids; to the extrication of nitrogen; and, probably, to other causes as yet unknown,—that the formation of the peculiar secretions of plants, of whatever kind, is owing. And this is brought about principally, if not exclusively, by the agency of light. Their green color becomes intense, in proportion to their expo-

\* Mr. Knight entertained the opinion, that water is sometimes absorbed by leaves to such an extent as to cause a *descent of the sap through the alburnum*; a derangement of function to which he even ascribed the attacks of mildew fungi upon plants. The secondary and immediate causes, he says, of this disease, and of its congeners, "have long appeared to me to be the want of a sufficient supply of moisture from the soil, with excess of humidity in the air, particularly if the plants be exposed to a temperature below that to which they have been accustomed. If damp and cold weather in July succeed that which has been warm and bright, without the intervention of sufficient rain to moisten the ground to some depth, the wheat crop is generally much injured by mildew. I suspect that in such cases an injurious absorption of moisture, by the leaves and stems of the wheat plants, takes place: and I have proved that under similar circumstances much water will be absorbed by the leaves of trees, and carried downwards through their alburnous substance; though it is certainly through this substance that the sap rises, under other circumstances. If a branch be taken from a tree when its leaves are mature, and one leaf be kept constantly wet, that leaf will absorb moisture, and supply another leaf below it upon the branch, even though all communication between them through the bark be intersected; and, if a similar absorption takes place in the straws of wheat, or the stems of other plants, and a retrograde motion of the fluids be produced, I conceive that the ascent of the true sap or organizable matter into the seed-vessels must be retarded, and that it may become the food of the parasitical plants, which then only may grow luxuriant and injurious." (*Hort. Trans.*, i. 86.)

\* M. De Candolle distinguishes between *exhalation* or perspiration, which is a vital action, *deperdition* or evaporation, which is merely physical. But the latter is too small in amount to be worth taking into account for practical purposes.

sure to light within certain limits, and feeble, in proportion to their removal from it; till, in total and continued darkness, they are entirely destitute of green secretion, and become blanched or etiolated. The same result attends all their other secretions; timber, gum, sugar, acids, starch, oil, resins, odors, flavors, and all the numberless narcotic, acrid, aromatic, pungent, astringent, and other principles derived from the vegetable kingdom, are equally influenced, as to quantity and quality, by the amount of light to which the plants producing them have been exposed.

76. It is, however, to be observed that, as has already been stated (68), the capability of plants to bear the action of direct light varies according to their specific nature. One species is organized to suit the atmosphere of a dense wood, into which diffuse light only will penetrate; another is planted by nature on the exposed face of a sunburnt rock, upon which the rays of a shadeless sun are daily striking; in these cases, the light which is necessary to the one would be destructive of the other. The organic difference of such species seems to consist chiefly in the epidermis, which regulates the amount of perspiration (61). It is therefore to be remarked, that it is not the greatest quantity of light which can be obtained that is most favorable to the healthiness of plants, but the greatest quantity they will bear without injury. If the former were true, the concentrated light of a lens would be better than the strongest ordinary light; but the effect of the concentrated light of a lens is to burn the surface, and the ordinary solar rays produce the same effect upon many plants, probably by exhausting the tissue of its water faster than it can be supplied from the roots.

In the course of time, a leaf becomes incapable of performing its functions; its passages are choked up by the deposits of sedimentary matter; there is no longer a free communication between its parenchyma and that of the rind, or between its veins and the wood and liber. It changes color, ceases to decompose carbonic acid, absorbs oxygen instead, gets into a morbid condition, and dies: it is then thrown off. This phenomenon, which we call the *fall of the leaf*, is going on the whole year round, except mid-winter, in some plant or other. Those which lose the whole of their leaves at the approach of winter, and are called deciduous, begin, in fact, to cast their leaves within a few weeks after the commencement of their vernal growth; but the mass of their foliage is not rejected till late in the season. Those, on the other hand, which are named evergreens, part with their leaves much more slowly; retain them in health at the time when the leaves of other plants are perishing; and do not cast them till a new spring has commenced, when other trees are leafing, or even later. In the latter class, the functions of the leaves are going on during all the winter, although languidly; they are constantly attracting sap from the earth through the spongelets, and are, therefore, in a state of slow but continual winter-growth. It usually happens that the perspiratory organs of these plants are less active than in deciduous species.

78. In general, a leaf is an organ of digestion and respiration, and nothing more; some leaves have, however, the power of forming leaf-buds,

if placed in or upon earth, under suitable circumstances. The *Bryophyllum calycinum* forms buds at the indentations of its margin; *Malaxia paludosa* throws off young buds from its margin; *Tellima grandiflora* occasionally buds at the margins of its leaves: the same thing happens to many ferns; and several other cases are known.

#### SOME REMARKS UPON THE DISEASE, CALLED THE "YELLOW," WHICH ATTACKS THE PEACH TREE.

From the Magazine of Horticulture.

I have noticed occasional useful remarks on the best varieties and the culture of fruit trees in your valuable Magazine; but I have not, as yet, seen any remarks upon the disease called the *yellow*, which affects the peach tree, or reasons assigned for its prevalence. If the cause could be found out, it might lead to a cure, which would render a lasting benefit to our country. However valuable most other fruits are, none are equal to the peach in delicious flavor and healthiness, and I should therefore be pleased to see this subject carefully investigated, and the experience of some of your intelligent correspondents communicated through your pages.

And as I have, for about thirty years, occasionally had my attention drawn to this subject, I am willing to throw in my mite of experience. I am fully satisfied that the complaint exists. Some persons say that the worm at the root is the cause of the yellow. I acknowledge that any disorder that destroys the trees will cause the leaves to turn yellow, but the complaint I call the yellow will kill a whole orchard, without any visible wounds, on or before the third or fourth full crop. I think where any neighborhood abounds with peach orchards, it will be nearly impossible to keep clear of the disease.

On planting out young peach trees on the side of a peach nursery, two years after the nursery was removed, and although the ground was in other respects well suited for the growth of the peach tree, yet by the next autumn many of them were dead, and the balance so sickly that I had them all dug up, and there was no sign of the worm at the roots. From this, and other similar experiments, I think the disease may be generated by planting in or near where a nursery or orchard of peach trees has been, or where the latter is; consequently, where a neighborhood abounds with peach trees, there is danger of its becoming overpread with disease, without greater care than is usually taken to prevent it.

I think I have seen evidences of its being in some degree contagious. Richard Cromwell, the respectable and worthy peach raiser, near Baltimore, has for upwards of thirty years supplied that city with peaches of the best quality, on a large scale. Some time since, when I was walking with Mr. Cromwell through his peach orchard, when the trees were hanging full of ripe fruit, he pointed out a tree that he said had the yellow, having a full crop upon it, at that time worth one dollar per peck, and to me it appeared healthy; but he observed to me, "as soon as I take the fruit from the tree, I shall dig it up, in order to prevent the disease spreading any farther,

for I expect the side of the adjoining trees next to it will be affected next season." I had occasion to pass through Mr. Cromwell's orchard the next fruiting time, and the sickly tree had been dug up, but, as had been predicted, parts of the four neighboring trees were evidently much affected, but only the sides next to the diseased tree, which made it the more striking, and convincing of the contagion, if this is a proper term.

On another occasion, I had a favorite early purple peach, before I had a nursery, that I suspected was partially affected by the yellows, and being desirous of preserving the variety, I cut the healthiest branch I could get, and I had twelve buds inserted in healthy peach stocks, but when they had grown about three feet, they showed the disease so plainly that in order to prevent it from spreading, I pulled up all the trees, and had them burnt.

From these cases, it seems to me the disease may be generated by planting old peach orchards or nurseries too soon after the removal of the old trees, and also by planting too near those already affected with the disease; and if cuttings or scions are taken from diseased trees, their product will be also diseased. I also think the yellows may be communicated to young trees by planting seeds taken from diseased peach trees. Respectfully your friend,

ROBERT SINCLAIR.

*Clairmont Nursery, March 18, 1841.*

#### CANKER WORMS.

From the *Yankee Farmer*, of July 18, 1840.

**Mr. Editor**—When I was in Boston last winter, I promised to give you some information respecting the habits of the canker worm; also some of the means to be used to prevent the ravages of this most destructive insect.

I shall commence with the insects in the egg, and shall proceed with a number of occasional communications, which I shall send you from time to time.

The worms are usually hatched about the fifteenth of May, sometimes earlier and sometimes later, depending very much upon the season. When first hatched they are very small, but their presence can soon be discovered by a close observer. They are, in the early stage of their growth, very susceptible of cold, and a frost is fatal to them; although the insect in its perfect state is as hardy, and will endure cold or a pelting storm like a polar bear; in fact, the grub in its ascent upon the trees in February when overtaken by a cold snap, much resembles Bruin when placed in like circumstances, by drawing up its legs under the body, and sleeping in a torpid state until moderate weather. Last spring, in a cold north-east storm, I observed the worms crawl into the closed petals of the apple blossom for shelter. They usually acquire their growth and leave the tree about the fifteenth of June, and during this period, change their skins several times.

They eat with astonishing voracity, particularly in their last stage, first devouring the leaf and then the fruit. After acquiring their full growth, which is usually in four or five weeks, they leave the tree by lowering themselves down to the ground by a silken thread, which they learned to spin

from the earliest period of their existence, as they move about upon the branches, always careful to have the end of the cord fast, so that if the branch on which they are feeding is struck, they will always show themselves by spinning down a few feet, and if suffered to remain a short time, they will again ascend the tree by their cord, alternately grasping it with their feet and seizing it with their jaws.

Professor Peck is in some respects incorrect, in his description of the habits of this insect. He says "the worms descend by the trunk of the tree in June, and immerse themselves in the earth near the trunks, and rarely if ever more than three to four feet distant." Our observation has led us to a different opinion. They leave the tree from the branch on which they feed, and suddenly spin down by their thread to the ground, and enter it to the depth of from two to six inches, and immediately change into the chrysalis state. I have seen them leave the branch of an elm thirty feet from the trunk, and at once work their way into the ground. And the grubs and millers can be seen in the season of their running, soon after sunset, struggling and fluttering through the grass for many feet around, usually to the extent of the branches of the tree, under which they are striving to reach the trunk. And if in their progress they meet with a fence, post, or house, they will ascend it, and the grub before leaving it will deposite her eggs.

As we have now fairly disposed of the canker worm, for at least a few months, by hurrying it in the earth, let us now look around us and see what can be done to counteract the bad effects of its ravages; and what I shall here relate, came under my observation last year. In purchasing a piece of land, I came in possession of twenty large apple trees, which had been eaten by the canker worm more or less for several years, but last year, particularly, the foliage and fruit were eaten entirely up. On some of the trees the worms were very numerous, and hardly found sufficient quantity of food to subsist upon.

After the worms had become quite large, I lessened their numbers by shaking the limbs and throwing coarse sand into the trees, thereby causing them to suspend themselves by their thread, and striking them off with a stick to the ground, and then tarring the trees to prevent their ascending them. Dry coarse sand or ashes placed around the trunks will answer the purpose, to prevent the worms again ascending the trees. Small trees in this way may be wholly cleared of worms, but on large ones this method of extirpating the insect avails but little, for after destroying great numbers, enough will still remain to greatly injure the foliage and fruit, besides the injury the tree will be likely to sustain in shaking it, when the bark from the great flow of sap at this season of the year is very apt to peel, thereby causing canker. For this reason, I prefer coarse sand thrown into the tree, as it will generally destroy them without causing injury. But after the insect is on the tree, if a large one, little can be done to destroy it, and it should be our chief aim to devise some way to prevent its ascending the trunk.

Soon after the worms had entered the ground and passed into the chrysalis state, I removed the earth around the trees to the distance of five feet from the trunk, and to the depth of six inches; this

I carted away and brought back, in return, some good manure mixed with earth, and placed it around the trees. In this way I got rid of a vast number of the worms by removing them with the dirt, besides increasing the growth and fruitfulness of the trees. I then covered the compost over with spent bark or tan, which I have found beneficial by preventing the growth of grass, and keeping the earth loose, and by the property it possesses of retaining frost, the earth around the trees is kept frozen, causing the grubs to remain still during the moderate weather in February, March, and beginning of April, thereby avoiding the necessity of tarring during this period. In the autumn and spring following the trees were tarred, and after the grubs were done running, they were scraped, and a wash composed of lime, soap suds, clay, and cow-dung applied with a whitewash brush to the trunk and branches. The trees were carefully pruned about the middle of May, by removing all the dead and diseased limbs, which, in consequence of repeated injury they had sustained by the worms, had become quite numerous.

There is nothing, perhaps, that will so soon cause decay in an apple tree as this insect. You will first notice the injury by observing the extremities of the branches, which will be dead, and unless they are removed in pruning, the disease will extend along to the trunk, and cause the death of the tree. Trees deprived of their foliage by the worm, generally put forth again the same season, but this extra labor of furnishing new leaves is very exhausting to the vigor of the tree, and hence it becomes necessary to prune close, and apply manure, and in some bad cases of injury, the more stimulating the better.

When manure cannot be obtained, digging around the tree will answer a good purpose by crushing the chrysalis, exposing it to the action of the sun and air, or to be devoured by birds, and the earth being loosened, will impart vigor to the tree. The question may be asked by some of your readers, when is the best time to dig around the tree? In reply, I would answer, I consider the first of July the best season, although it may be done at any time, from that period to the fall of the leaves in autumn. The reasons for my preferring the first of July are these. The worms having passed into the chrysalis state, the shells are soft and tender, and are more easily crushed by digging, and the tree will the sooner recover from its injury by receiving an immediate benefit from your assistance, but if delayed until autumn it will derive little benefit from your labors the present year. I have succeeded by the process above described, in completely restoring trees to the highest state of health and vigor, covering them with an abundance of fruit and foliage, and with but very little appearance of the canker worm. Yours, with respect and esteem,  
S. P. FOWLER.

[Having previously signified our intention to copy the above article, Mr. Fowler, after requesting us to make a few corrections, adds—]

*The method to be used to renovate and restore to health and vigor apple trees that have received injury from the canker worm.—When trees have been suffered to be eaten for several years, as is*

sometimes done by some persons, under the mistaken notion that it is best to let them alone and eat themselves out, as they term it, it frequently becomes a subject of inquiry, what is best to do with them to restore them? I will relate to you the method a neighbor of mine pursued in regard to his trees, by my suggestion. He had suffered the canker worm to injure them most severely; many of the limbs were dead—others partially so; suckers were growing up from the middle of the tree; the limbs and trunks covered with moss, and with the appearance of canker—exhibiting decay and disease. Four different modes to pursue toward the trees presented themselves to our minds. The first was to cut them down and set out new ones; but this was given up, when we considered that it was a well established fact, that new orchards do badly on the site of old ones. The second was, to head them down, after the manner laid down by Forsyth and other writers, to restore old and decayed trees; but this mode was abandoned, for reasons which will hereafter appear. The third was, to trim out the suckers and cut off the dead limbs, shorten those half dead by cutting them down to the live wood, pruning close, ploughing or digging amongst the roots; how we should have succeeded in pursuing this method, I do not know; it has been practised by Capt. Benj. Porter this spring upon his trees, which you will remember the canker worms and neglect have caused to be in a bad condition. We shall see the results in a few years, if we live. Had I owned that large orchard, I would have given considerable for the opportunity which he had of entirely changing his trees, by grafting the suckers upon his old, and many of them poor varieties of apples, and substituting the new and better kinds of fruit.

Our principal objection to this method was the difficulty of again imparting vigor in old and diseased tops, full of moss and canker, and likewise perceiving the tendency of the sap to flow into the suckers instead of the old limbs; and should these suckers be removed every year, or indeed twice a year, as we have sometimes done, still there is a tendency in the tree to throw out new suckers, plainly indicating thereby that it is striving to obtain a new top, which in time it would acquire without assistance, (although much better with it,) by the growth of the suckers and the old limbs dying down to the trunk. Our fourth method, which we practised with success, and recommended to others, is as follows. First, to cut out all dead limbs close to the trunk, and when large, apply paint, with a brush, to the wounds. Red or yellow ochre is best; by the way we consider this the best application for wounds caused by removing large limbs, or by accidents, that can be made. I applied Forsyth's composition to the ends of limbs removed in pruning a few years since, and I found some of them rotten, caused by its retaining moisture, as I supposed. Cut off all partially dead limbs down to the live wood. Trim out the suckers, leaving a sufficient number of the most vigorous to form a good head to the trees, and apply the wash; dig around the trees and apply manure, if you have it. When the suckers have acquired a sufficient size, graft them, and as they grow and occasion may require, cut the old limbs out close to the grafts at the fork, prune the grafts and give them a proper direction, so as to form a

good top. By this method, in a few years you can get rid of the old head, substituting for it a new one, healthy and vigorous. The advantages of this method over all others in restoring trees badly injured by the canker worm, are these; it gives us an opportunity by grafting, to obtain the new and better varieties of fruit; and in some old orchards this is very desirable. The reasons why we prefer it over Mr. Forey's method of heading down are these; the old limbs are bearing some fruit while your grafts are growing in your suckers, and you do not risk the life of the tree by depriving it at once of all its limbs, for there is some danger of losing large trees in this way.

There are many things connected with the habits of the canker worm and the means of its destruction, which it might be useful to publish. It has undoubtedly produced more injury to our apple trees than any thing else.

The next most destructive insect to our trees, or rather fruit, we have to trouble us, is the curculio. They have increased very much with me in a few years, destroying or injuring, I should think, nearly half my fruit.

The canker is a disease well understood in England, but very little here. It is common with us, and when its effects are seen, it is ascribed by many people, ignorantly, to injury caused by severe winters, and nothing more thought of it. Much might be said on the subject of pruning. Very many people who prune trees, know but little about it. Much has been said and written on the proper time to prune, but after some considerable experience I think more of the manner of performing it than I do of the season in which it is done. All seasons have their advantages and disadvantages, and much might be said on both sides; I have pruned at all seasons of the year successfully and now do it when I have leisure and my saw is sharp. The attention of many people has been directed within a few years to the cultivation of fruit trees, and more have been set this year than I ever knew before.

A great deal more I have to write, had I space.  
Your friend,  
S. P. FOWLER.

N. B.—I wish to be understood in my remarks upon pruning, that I prune any time between the fall of the leaf in autumn and the middle of May following. I never pruned at any other season of the year, except to remove suckers in July or August, which I think advantageous. And now as I am upon a fresh sheet, I will say more.

As I before remarked, many people are setting trees and selecting the kinds from the knowledge they obtain from books, regardless of their adaptation to particular soils and situations, which is a great mistake. Thus, for instance, the Newton pippin, Pennock's red winter, and many others raised south of New York are indifferent fruit with us, however excellent they may be at the south. And some of our common varieties of fruit, for instance the Pickman pippin, a most valuable apple with me, I am informed by Mr. Jno. M. Ives, is a poor tree in his soil. And the old blue pearmain, greatly extolled by some persons, in my soil the fruit is poor and the tree a shy bearer.

S. P. F.

#### FIRST EXHIBITION AND FAIR OF THE AGRICULTURAL AND HORTICULTURAL SOCIETY OF HENRICO.

The results of this first attempt, considering the always unfavorable circumstances of every new beginning, were highly gratifying to all who felt interested therein; and to us they not only furnished a subject for gratification, but of surprise. The show of fine animals was much better, and more full, than we had expected, and that of implements of husbandry, machines, and agricultural and horticultural products, was still more abundant. Above all, the great concourse of visitors must have been quite unexpected, and, we trust, gave an additional impulse to the zeal of the society, as well as a very considerable addition to its funds, by the payments for admission tickets. We believe that the expectations of every person present were far exceeded by the reality, in all the respects referred to above. So far, this young society has rendered excellent service; and its members have but to persevere, and to pursue a proper *working course*, to render very great benefit to the agriculture of Virginia. We should rejoice to see the good example followed by the establishment of societies in every county in Virginia.

If there was any thing to object to in the exhibition, it was a fault caused by the great interest shown by the public, and the consequent want of room and sufficient accommodation for the unexpected crowd of visitors. There were in fact so many viewers, that many of the things exhibited were not seen, nor heard of at the time, by half the persons on the ground. This defect can hereafter be easily guarded against.

We copy below the official reports of the premiums awarded, and other proceedings.—ED. FAR. REG.

From the Richmond Compiler.

The toasts given at the dinner after the cattle show and fair of the Henrico Agricultural Society have been placed in our hands, and will be found below. The Rev. Jesse H. Turner, president of the society, presided, assisted by the vice presidents, Messrs. Thos. S. Dickin and Richard G. Haden. The best feeling prevailed, and the toasts were washed down with domestic wine.

*Toasts by the Agricultural and Horticultural Society, at their Dinner on the 26th May.*

1. Agricultural Exhibitions: Courts of justice, truly open to the high and the low, the rich and the poor, where "the fruits of skill and labor rise to give testimony, and where the very earth is eloquent, and speaks nothing but the truth."
2. The farmer: He who handles the plough may always be trusted to wield the sword.

3. Woman: The last created and fairest flower that bloomed in Eden.

4. James Barbour: The successful agriculturist, the eloquent patriot, the upright man:—although absent he cannot be forgotten.

5. James M. Garnett: The virtuous and enlightened citizen and zealous promoter of the interests of agriculture. His presence affords encouragement and satisfaction.

Mr. Garnett responded to this toast very briefly. He complained of a deviation from the custom observed in his early days. Then every body had credit for more or less of modesty, and rather than put a man to the blush, a gentle hint was always offered that he might retire before a complimentary toast was given him. He confessed the awkwardness of this position under the new fashion, but thanked the society for the flattering toast just drank. He gave the following sentiment:

Pasturage and tillage: The two breasts of the state—may they never go dry from the mismanagement of the state milkers.

6. Edmund Ruffin, editor of the Farmers' Register and of the Southern Magazine—His labors are unceasing to give fertility to our soil, and purity to our political institutions.

Mr. Ruffin expressed his thanks to the society for the notice they had taken of his efforts, and offered the following toast:

Marl banks and paper-money banks: All the vast increase of riches offered to agriculture by the former, will not furnish a sufficient supply for the legal and ordinary depredations committed by the latter.

7. Charles T. Botts, editor of the Southern Planter: a young, but ardent soldier in the cause: we give him the right hand of fellowship.

Mr. Botts expressed his grateful sense of the compliment paid him. He introduced, in a happy manner, the following toast, alluding to the kingdom where one man held despotic sway, and to another kingdom where, he said, every man was a monarch:

The farmer: The monarch of the vegetable kingdom.

By Charles Burton. The memory of Chas. Von Linnæus, the illustrious founder of modern botany and classifier of all nature: Most truly meriting the motto granted by his sovereign—"Deus creavit, Linnæus disposuit," God created, Linnæus arranged.

Mr. Lyons, on behalf of the society, read the following toast:

Our respected president, whose industry, energy and skill have caused the "desert to rejoice and blossom as the rose."

Parson Turner said he felt greatly flattered by the kind compliment from the society through his friend and fellow member, Mr. Lyons, who he felt sure would heartily make up any deficiency on his (Parson T.'s) part.

Mr. Lyons, with much good humor, said, in substance, that it had been his lot frequently to be called on to perform duties which occasioned embarrassment, and in the discharge of which he himself felt deficient—but he was not the least embarrassed on the present occasion, because there was no deficiency for him to supply.

The company broke up at an early hour, much

gratified with the proceedings of the day, and animated with a fervent zeal in the cause of the society.

*Premiums awarded by the Agricultural and Horticultural Society, on the 26th of May.*

No 1. For the best horse or colt calculated to produce stock for the draught or saddle, \$15. Report of the committee, that none was offered worthy a premium.

No 2. For the best blood mare, of the same description—premium, silver cup, value of \$10, awarded to Ro. Carter Page.

No 3. For the best jack, a premium of \$15, awarded to Wm. Jennings.

No 4. For the best bull, for domestic purposes, a premium of \$10, awarded to W. B. Synnor, upon his Durham bull Frolic.

No 5. For the best milch cow, a premium of \$10, awarded to Abraham Warwick, for his Durham cow, Lady Eilersly.

No 6. For the best yoke of oxen, a premium of \$10. Committee reported that none were exhibited worthy a premium, and recommend that this premium be given to Mr. Colquitt's Durham cow, Washington Belle, for reasons stated in their report.

No 7. For the best boar, a premium of \$15, awarded to the Rev. J. H. Turner, on his Berkshire boar President. This premium relinquished to the society.

No 8. For the best brood sow, a premium of \$10, silver cup, awarded to J. M. Sublett, on his Berkshire sow Suke.

No 9. For the best specimen of fruits, the production of the exhibitor, a premium of \$10, awarded to Mrs. E. A. Petticolas.

No 10. For the best specimen of rare and beautiful plants or flowers, the production of the exhibitor, a premium of \$10, awarded to New and Heydecker.

No 11. For the best specimen of vegetables, a premium of \$15, awarded to Wm. H. Richardson. This premium relinquished to the society.

No 12. For the best cultivated market garden, a premium of \$15. Not awarded by the committee appointed.

No 13. For the best specimen of domestic wine, the production of the exhibitor, silver cup, value \$10, awarded to Josiah Woodson.

No 14. For the best specimen of domestic silk, the production of the exhibitor, a premium of \$10 silver cup, to J. P. Shermerhorn.

No 15. For the best specimen of butter, not less than 5 lbs., the production of the exhibitor, \$10, awarded to Mrs. Ro. A. Mayo and Mrs. George Woodfin, \$5 each.

No 16. For the best suit of clothes of Virginia manufacture; the premium to be given to the producer of the materials of which the clothes were made, a premium of \$15, awarded to Thomas S. Pleasants.

No 17. For the best specimen of agricultural implements, ploughs, cutting machines, corn-shellers, &c. \$15, awarded to Greter and Peake on a plough, \$5, relinquished—the exhibitors not being patentees or manufacturers; to C. T. Botts, cutting machine \$2.50, this premium relinquished to the society; to Jabez Parker, corn-sheller, \$2.50; do. wheat machine and fan, \$5.

**DEPRECIATED AND WORTHLESS BANK NOTES,  
AND SUBSCRIPTIONS TO THE FARMERS' REGISTER.**

From the depreciation of the paper (and now sole) currency of the country, which is the general result of the swindling banking system, all branches of business suffer greatly—and all persons, except usurers, and traders in exchange, and especially the banks, which manufacture this depreciated currency, and whose greatest profit now consists in the depreciation and discrediting of their own notes, caused by their own illegal and dishonest action. But *our* particular employment, as publisher of a periodical, perhaps suffers more than any other; and if our subscribers continue to delay payment upon the ground of difficulty to obtain better funds, or to pay us in depreciated money as many have done latterly—and this currency should still continue to grow worse and worse, as we expect it will—then our publication and business must be broken down, even with a subscription list larger and more valuable *on paper*, than it ever has been before. We *had* thought that the words of our conditions, (though adopted long before the banks had reached their now very general degree of fraud, and their issues of depreciation and deserved discredit,) would have guarded against very heavy losses by discount on money worse than that of our own banks in Virginia—which is bad enough. But not so. It is not only that particular banks and their notes, formerly in something like good credit, have become discredited, but also that many subscribers seem to think that a depreciated bank note has at least *one peculiar value*—which is, to serve as payment for the Farmers' Register.

Owing to the great and still increasing losses from this source, we *must* require hereafter full compliance by subscribers, in regard to the bank notes they send, with the long existing conditions of publication. These have long required, 1st, that remittances shall be in notes or checks on *specie-paying banks*, if any such there be in the state in which the subscriber resides; 2dly, if there be no such notes, (and there are none now, south of New York, that we ever see, except of South Carolina banks,) then, that payment shall be made in notes of par value in Virginia, (that is, not more depreciated than the bank notes of Virginia,)—and 3dly, if neither one or the other can be done, any notes of a *city bank*, of the state in which the subscriber resides, would be received—supposing of course that such would be among the *best* currency of that state. Now, even under these restrictions, (or professing to respect them,) we have had paper sent us which we cannot sell

at 30 per cent. discount. (We refer not to actual frauds in payments, by *gentlemen* of high standing too, in paper almost worthless here, and discredited at home—as Brandon paper formerly, and Union (Florida) Bank notes recently.) We have to lose a heavy discount on nearly all the bank notes (or all such as are sent to us,) of Georgia and Alabama. By the prices current it would seem that Savannah and Augusta notes are as good at home as those of Virginia are at home. But not one of these *city* bank notes have we seen, while remittances have been sent us of notes of every smaller town and every more discredited bank in Georgia. In other cases, notes are sent, as of “*specie-paying banks*,” because the bank authorities, and the newspapers acting under their orders, *called them so*—when such notes were 5 to 10 per cent. below specie at home, and much more abroad. By the way—there is only one mode of testing whether a bank is *specie paying*, or *non-specie-paying*; and that rule is infallible. If the notes of a bank, where issued, are worth less than specie, it is certain that the bank is not truly and fully paying specie; and all the assertions or oaths of bank officers and directors, and bank debtors and bank slaves, and newspaper editors, to the contrary, are not worth a straw as testimony, if in opposition to the simple fact of even so much as one per cent. discount. Yet some banks whose notes are 5 per cent. below par at home, and 20 abroad, have claimed to be “*specie-paying*”—and their officers and directors, and men too of high-standing, are not ashamed to maintain the truth of the palpable and self-evident falsehood.

It is impossible that we can devise any form of phrase for our conditions, which shall serve to meet and guard against all the old and the new frauds of issuers of paper money—and therefore it will not be attempted farther than has been done already by the long used words of our conditions. Subscribers who desire to comply with their obligations, can do so, at least with a little delay, by sending paper not depreciated (below specie) at most above 5 per cent. at home, and which might not be worse than 10 per cent. discount in Virginia. This would be a heavy loss, and perhaps enough to ruin our business, if continued long. But we cannot longer submit, voluntarily, to receive much worse currency, and in some cases, as it would seem, selected by the senders because of its low value. Nor will the claim to pay such discredited notes be admitted the sooner, because the bank adds to its other frauds the false assertion that it pays specie; or because such fraudulent and discredited or bankrupt bank may be located in a city.

We are obliged to bear all losses which our distant subscribers choose to put upon us. If they

choose not to pay at all, we have no remedy—and if they choose to commit the wrong, somewhat less in degree, of paying in notes at 10, 20 or 30 per cent. discount, we can no more help ourselves. But the imposition and injury are not the less felt, and appreciated, because not always protested against; or because it is submitted to, without complaining in each particular case.

In fine, we beg that all who are well-wishers to this publication, and desirous of its success and permanency, will duly consider the enormous injury that it is subjected to in this respect. To enable it to bear up under such heavy losses, it is necessary that every existing subscriber should perform his obligations as nearly as the general fraudulent course of the banks will permit; and also to use his influence to extend the circulation, and thereby increase the income of the publication. We lose on the best of bank notes, as those of Virginia, say 4 per cent. on the difference between their value and specie—10 to 50 per cent. on the larger part of all payments from south and west of South Carolina—besides losing very many payments entirely, mainly because of the difficulties of procuring good money for remittances. The great and general depreciation of the paper currency in Georgia, Alabama, Florida, Mississippi and Arkansas, serves as an excuse to most subscribers for their paying nothing; and to our best friends and efficient supporters in those states, who desire to continue, as they have done heretofore, to pay their dues fully and promptly, it is so disagreeable and galling that they should be compelled by the banks to be delinquent, that many of them will withdraw their subscriptions, because of the impossibility of making their payments punctually, and in notes not greatly depreciated. Thus we lose in every way by the fraudulent banking system; and it will require all the counteracting aid and increased support of the friends of the Farmers' Register to prevent its sinking under these increasing losses of every kind thus produced. In opposing that system, and the whole army of banking pillagers, we have to suffer much from the hostility and revengeful influence of that powerful interest. This alone would cause much withdrawal of support from this publication. But we should not regard the worst effects of the hostility of the banking interest, powerful and pervading as is their influence, if we could but be protected from the worst impositions of their cheating and robbing operations, carried on, not in malice, or hostility or revenge, but merely for the profit of the dishonesty. If then, those of our friends who are heartily opposed to this system of general and growing fraud and pillage, do

not desire to have our publication silenced in regard to their enormities, and put down, by being so cheated and robbed that it can no longer be supported by its income, they must exert themselves to meet the danger, and counteract it by new exertions to sustain the publication. We say frankly, that according to present appearances, half our issue will be a charge instead of a profit to the publication; and that if the same appearances continue to the end of the year, the names of nearly half of our subscribers must be erased, after their having been furnished with our publication, for one or more years *gratis*.—ED. FARM. REG.

#### GAPES IN CHICKENS.

From the Cultivator.

*Messrs. Editors:*—In your April number, a correspondent attributes the gapes in chickens to breeding from too old cocks. Whether this will have any effect to produce the disease, I am unable to say, but I have long since found a *preventive*, and practised accordingly. This I have communicated to others, who have complained of the malady; and similar treatment, as far as my knowledge extends, has been attended with the same marked result.

The disease is prevented simply by scanting them in their food. Who ever heard of chickens which were not confined with the hen, but both suffered to roam at large and collect all their own food, to be troubled with this disease? The most common food for young chickens is Indian corn meal, mixed with water so as to completely saturate it. This, when eaten in too large quantities, is almost sure to produce the gapes. Great care should, therefore, be observed in the feeding of them, and the meal should be previously mixed some few hours, or otherwise it will swell in the stomach of the chicken, which, when full, is the very cause of the disease. GARRET BERGEN.

Brooklyn, N. Y. April 20, 1841.

#### DESTRUCTION OF CATERPILLARS.

From the Boston Cultivator.

Our readers are reminded that this worm should be attended to in season and when this is done the labor of extirpation will be trifling. Close attention to clear the limbs for one or two years will entirely rid an orchard of the nuisance.

One easy mode of destruction is to apply strong soap suds to the nest—if the tree is large a swab tied to the end of a pole will accomplish the purpose effectually. Suds which have been used by the washwoman are good as any, and by rubbing a swab on the nest—after it has been dipped into the suds—the worms are quickly destroyed.



## ON THE TART OR PIE RHUBARB.

From the Farmers' Gazette.

Jussieu, in his classification, has placed this plant in the 6th class, *Dycotyledons*, 52d order, *Polygonæ*, or the *dock tribe*; herbaceous. In the classification of Linnaeus this order of plants is placed in the 9th class, *Enneandria Trigyna*. It only includes four families: the laurel, the cashew, the rhubarb and flowering rush. Of the 3d order there are nine species or more; the only ones, which are cultivated in the kitchen garden, are the *Rheum Rhaponticum*, introduced from Asia to Great Britain in 1578, the Siberia in 1758, and the *Rheum Hybridum*, from Asia in 1778.

These three species are raised in this country for the sake of their succulent acid petioles, as a substitute for sour apples, gooseberries, &c., or an addition to them. The two latter species seem not to have been long imported into the United States, or, if they have, not been extensively known at the south.

The rhapsodic and the undulate have leaves from eighteen to twenty-four inches long, and from twelve to eighteen wide, according to the soil and season; they are cordateovate, rather obtuse, blunt, smooth, with reddish veins; their flowering stalks will grow to the height of three or four feet. There are many distinctive marks in the leaves of these two species, not necessary to be here mentioned. Probably Wilmot's early scarlet rhubarb is a variety of the rhapsodic, and there may exist many other varieties.

The hybrid species has very large leaves; when under good cultivation, they will often measure four or even five feet in length, and of a proportionate width; they are somewhat cordate, smooth and of a light green or glaucous color.

These three species are cultivated for the stems of the lower leaves, which come to maturity earlier in the spring than the gooseberry and other fruits for which it is a substitute; the hybrid affords the most abundant and succulent supply for these purposes. Rheum derives its name from the ancient name of the river which watered its native region; the *Rha*, now named the *Volga*, emptying itself into the northern shore of the Caspian Sea.

All the species of this plant may be propagated from the seeds or from the roots; if from the seed, which is the best mode, in February or March, sow the seeds about six inches apart in a light deep and rich soil; well pulverized, for depth and richness of soil are indispensable requisites for good healthy plants.

In the autumn of the same year, if you have taken good care to water and to shelter them from the scorching suns of the summer, the plants will be fit to transplant into their beds; young plants require careful watering, even when it would be injurious to older roots; and we have seen them protected from the sun by driving down on the south side of each plant, a board about twelve inches wide, and slanting so as to break the sun's rays in the middle of the day, and yet let the air and light have free action upon the plant. In this way you can in all October have them put out so as to produce leaves for the next spring:

When the roots are divided for transplanting,

you must retain a bud on the crown of each section. Before transplanting, either these sections or the young plants from seed, select a light soil, rather inclined to sandy, have it highly manured and spaded up to the depth of three spits of twenty-one inches, and thoroughly pulverized—then set out the rhapsodic or the undulate in rows at the distance of three feet by two—but the hybrid at five feet by four.

They will now only require to be kept free from weeds, and to have the ground occasionally stirred up with a three tined fork or a rake, adding every spring a good dressing of well rotted manure, stirred into the earth as deeply as possible, and your bed will continue good for many years.

The advantages of having the petioles or leaf stalks blanched for all culinary purposes, are twofold, *i. e.*, the desirable qualities of improved appearance and of flavor, as well as a saving in the quantity of sugar, necessary to render them agreeable to the palate; for the blanched leaf stalks are much less harsh than those grown under the full influence of light in an open situation.

This plant may be forced by placing flower barrels or tight boxes over a few plants and covering them over with fresh stable manure or by some of the other methods in gardening, directed for forcing vegetables. By covering over all the roots to the depth of a few inches with leaves or light litter or any other protection from cold, the rhubarb leaves will come forward much earlier in the spring and much larger. The protection should be removed as soon as the weather becomes warm, carefully avoiding to injure the young shoots that may have started.

Whenever you would gather the petioles remove the earth a little from the crown of the root, and somewhat bending down the leaf, which you would remove, then slip it off with your hand, without using a knife or breaking the stalk. The leaf stalks may be gathered as soon as they are half grown or are sufficiently expanded; but a much larger produce can be obtained by letting them remain until full expansion has taken place, when the full grown stalks are gathered and tied up in bundles of about a dozen each, and thus exposed for sale in the market. Some of the leaf stalks are two or three feet long and over.

As letting the stalks run up to flower would weaken the powers of the roots for preparing the necessary nourishment for winter quarters,—top all but a few of the healthiest ones, which may be left to perfect their seeds, which will ripen in August or the last of July.

The petioles or leaf stalks of the rhubarb plant are used in cooking pies, tarts, preserves, sauce, puddings, &c.

1. *Rhubarb preserve*; strip the stalks of their outer skin and divest them of the small fibres which would render them stringy,—more especially if the leaves are a little old,—then cut them transversely into short pieces about the size of gooseberries, and parboil them with as much sugar and such spices as suit the taste.

2. *Rhubarb pudding*; with a rolling pin, as if for an apple dumpling, flatten out a suety crust and spread thereon the stalks cut into small pieces of a gooseberry size, then roll them up in any shape at fancy and boil in cloths, same as apple dumplings; it is served up hot, cut in thin slices with sugar and butter sauce between

each layer; in this way the fruit retains all its virtues and by most persons is highly relished.

3. *Rhubarb pie*; cut the stalks to pieces of the size of the gooseberry, put these pieces into a dish with its bottom covered with a crust or not, at pleasure; squeeze over them a little lemon juice, adding orange peel, sugar, rose-water, cinnamon and other spices to your taste, covering the whole with a good puff paste, and then bake it.

4. *Rhubarb tarts resembling codling tarts*; cut the leaf stalks into pieces about four inches long, skin and slowly simmer them in a saucepan with sugar and a trifle of water, for one hour; when cold, make them taste like codlins by adding cinnamon, lemon peel, &c.

5. *Rhubarb sauce*; boil the stalks over a slow fire, till tender, in a small quantity of water with sugar and such spices as suit the taste, and strain off the liquor, squeezing the stalks dry, and, when the liquid syrup or sauce is cold, bottle and cork it tight; this will keep for years.

After giving the above recipes, we are sure that our esteemed fair correspondent will excuse us from publishing the recipes for making rhubarb cream—jelly—jam—trifle—fool—marmalade, &c. as they can easily be made from the cookery books, by substituting "rhubarb" for "gooseberries," "strawberries," &c., used in the common way of making those sweetmeats.

#### A MINUTE SCIENTIFIC DESCRIPTION OF KENTUCKY BLUE GRASS.

From the Kentucky Farmer.

We have much satisfaction in laying the following description of our great grazing grass, before the readers of the Farmer. We hope it will serve to settle the disputed question as to what species of the *poa* genus the blue grass is; for there appears to be great difference of opinion, even among botanists, on the subject. Although the more general opinion is, that it is the *poa pratensis*, yet it has been, by various writers, supposed to be *P. viridis*, *P. trivialis*, &c. &c.

In regard, however, to the accuracy of the following description of it, be it what species it may, we are prepared to vouch; having gone carefully through the dissection and inspection of all the parts or organs of the plant and flower, by means of a good microscope. Mr. Lewis spent ten days of labor in dissecting many flowers, to be certain of the correctness of his description; and, after he had become entirely satisfied, we then spent a day with him, verifying the accuracy of his description. Although we have no expertness in such dissections, we can yet venture to say that, with the aid of a good microscope, we could see that his description, as far as it goes, is correct. All that he states may be relied on; though our readers will not require an endorser for Mr. Lewis' scientific opinions. It will be observed that he does not speak of a *nectary*; and this is because he had not been able to discover it. Every other important organ of the plant was discovered; and he only describes what he saw.

It will be observed that the description by Mr. Lewis comes near identifying our blue grass with another *poa* as described in Nuttall; but, al-

though the agreement is remarkable, the discrepancies leave room to hold on to the claim of *P. pratensis*. In some of the scientific descriptions of *P. pratensis*, it is said to have creeping roots; but such is not the fact with regard to Kentucky blue grass. We leave it with botanists to settle the scientific term; and we shall forward to a number of them, in various quarters, specimens of the genuine grass.

Llangollan, May 26, 1841.

Dear sir—The grass called in Kentucky, *blue grass*, in Virginia, *goose grass*, *yard grass*, *greensward*, in England, I believe, great or smooth stalked meadow grass, by all botanists arranged in the *poa* genus, but by some called the species *P. pratensis*, by others *P. trivialis*, is now in bloom. I have taken some pains to examine it with a compound microscope of some power, and give you the results of my examination. But so similar are the characteristics of the species, in this genus, that I am doubtful, after all, if this plant can be distinguished by the characteristics herewith sent you, from other species of the same genus. Its general appearance is sufficient to enable farmers, familiar with it, to distinguish it at a glance, from all other species, not only of the *poa* genus, but from all of the *gramineæ* family. Its root is fibrous, without knots or enlargements of any kind, throwing off at their sides secondary fibres, as fine as a single thread of a silk-worm, of a pure white color. The roots in a favorable soil are caespitose, throwing up many radical leaves and forming a dense turf, so that the seeds of other plants cannot reach the ground, and hence the plant excludes most other kinds of vegetation. The roots will grow as long as the stalk or culm is high, and they are perennial. The stalk, although it to the naked eye appears a smooth-surfaced cylinder, from node to node, is *striated*, with raised, longitudinal, parallel stripes of deep green, covered with lines of scabrous, whitish, protuberant dots. Alternating with these stripes, square-edged grooves of a paler green and smooth surface, run parallel with them from node to node, giving to each internode the appearance of a grooved fluted column with raised plain surfaces between the grooves of a deep green, dotted with *white stucco*,\* and the bottoms of the grooves of a pale green and highly polished. The culm in this country is from one foot to four feet high, but where it has been grazed, from three to eighteen inches high. The sheaths of the cauline leaves are much longer than the lamina. The stipule is a semi-circular extension of the sheath about one-twentieth of an inch above the articulation, deprived of parenchyma and of silvery white color and scarious jutting above the blade and resting against the culm it gives the appearance of a sheath cut off and the blade or lamina of the leaf glued on to the back of it just below where it was cut off. The lamina or blade of the leaf is linear-lanceolate with a coarctate pungent point. The blade carinate

\* May not the regular lines of which dots on the stalks be a silicious deposit to strengthen it? Dr. Brewster gives it as his opinion, that the *Tubashear* in the nodes of bamboo is an integral element of the plant itself and not an accidental deposit, and that it performs some important function in the processes of vegetable life. See the Edinburgh Journal of Science (16th) page 285, 1823.

with serrated edges and surface exactly similar to that of the culm, and having a distinct dorsal line from the base to the apex, and constituting the pungent scarious point. In the early part of the growth of the culm the cauline leaves ascend, making an acute angle with the stem. They subsequently fall to a horizontal position, and ultimately flag loosely down like a streamer from the mast head of a ship. The culm is hollow or fistulous from node to node. The radical leaves are linear-lanceolate, and in all respects like the cauline leaves, except that they are much longer and narrower, being frequently two feet long. They, as well as the cauline leaves, are frequently partially discolored with brown ferruginous blotches. The peduncle or flower stalk is a rachis or axis of inflorescence, with the nodes gradually approximating as they approach to the top, and its diameter diminishing to the size of a fine thread. There are generally nine nodes to the peduncle, besides the terminating spikelet of flowers. From every node there proceed divaricate spikes in semiverticils alternating with each other. The semiverticil at the lower node contains five spikes generally. They divaricate horizontally at right angles to the peduncle, the two forming the diameter of the semiverticil, and the one at right angles to them being longer than the two intervening spikes. These spikes are then divided into spikelets at some distance from their insertion at the node. And on these spikelets and on the termination of the main spike grow the flowers. On the spikelets there are from two to six flowers. Each succeeding semiverticil to the top is formed like the lowest one on the peduncle, but the spikes are shorter, and generally fewer in number at each ascending node, so as to form a conical pyramid of inflorescence or loose sugar loaf shaped panicle. The spikes and spikelets are finely filiformed towards their extremities and tapered from their junction with the stalk. The flowers are densely arranged on these flatly, or compressed and distichously placed on the rachis with their points all directed to the apex of their respective spikelets, and each flower and even each of the *flosculi* of the flower having its own distinct pedicel. The flower, so called because the two glumes are common to the three florets above them, is composed of three distinct flosculi or florets, one immediately above the glumes, the next alternately above it on the spikelet or rachis, and the third terminating the spikelet or rachis. The glumes in their form are exactly like a small portion of the end of the lamina of the leaf, that is lanceolate, carinate and pungent, they are scarious at their edges near their apices. But on their dorsal line they have toothed setæ, hooked from their base to their apex, all the points inclining to the apex. These hooked setæ are formed like cat's claws or the prickles on a rose bush. These, as well as the exterior valves of the paleæ, are green, in botanical language, unclouded, except at their points. The paleæ are similar in their form to the glumes, but are without the prickles on the back. Their edges have a whitish tinge with a slightly reddish brown color towards their points. The interior paleæ are more acute and of a whitish green. Between the glumes and the valves and within the latter also proceeding from their interior, at their junction with the pedicels, very fine *Arachnoid Tomentum* like battled silk floss and very

white ascend almost to the points of the glumes and paleæ. In each floret there is one stamen and one dygynic pistil. When the flowers expand the anthers of the stamens fly out. Each anther, of which of course there are three, consists of two transformed leaflets dorsally glued together or anastomosing. The outer edges of the lamina of each of these leaflets are curved outwards from their dorsal junction and inwards towards their upper surface, till they meet so as to form two pollen cases or lobes joined back to back. These edges open again longitudinally and form the line of dehiscence when the pollen is to be discharged on the stigmata. They are carinate. The bifurcation between the ends of these cells which were the apices of the transformed leaflets is wider and deeper than at the ends which were the bases of the leaflets. Between the curved angle of the latter ends of the carinate cells the filament passes forming the connectivum. The filament is extremely small, of arachnoid fineness and elasticity, and so long that the three filaments become twisted together very often, soon after the expansion of the flower. The anthers thus formed and connected each with its floret by its fine filament are extremely versatile and in constant trembling motion with the slightest breath of air. While enclosed in the paleæ they are of a greenish white color. After they come out and have been some time exposed to the atmosphere they assume a bluish purple lilac hue. When several panicles in bloom are shaken, the grains of pollen form a little cloud like smoke, but a single grain is invisible to the naked eye of most persons. When viewed through the microscope it is subrotund of a dusky leaden color, except in the centre, which presents a white speck. The pistil has two short cylindrical greenish styles standing on a subrotund germen or ovary, like the bodies of short trees from which on every side proceed curved and strait and branching stygmatic limbs, the filiformed silvery subdivisions of which are like the twigs or minute branchlets of a tree. There is a slight depression of the germen between the bases of the styles. In each of the three florets of the flowers there is one of these styles which with its stygmatic branches and twigs of silver is a miniature representation of a tree covered with sleet glittering in the bright winter sunshine. The germen is of a light green color. The stygmatic branches when the dehiscence takes place of the anther cells protude between the expanding edges of the paleæ near their points so as to receive the discharged pollen.

Sometimes four flosculi or florets are found in one flower and in all such cases there are four stamens and four pistils, one pair of these organs being found in each floret. One flower containing three flosculi or three florets carefully separated with its pedicel from the spikelet just before it bursts into bloom, is like the head of a spear in its form. The apex being considerably more lanceolate than the base. The edges of the lower part of this lance-head being formed by the dorsal lines of the glumes show the prickles on them slightly curved, and these points inclining to the point of the spear. The surfaces of this lance-head are slightly convex and it becomes thinner towards the point. If the pedicel were lengthened for a handle it would then represent

a formidable liliputian spear. *The length of this lance-head is very generally three-twentieths of an inch and its greatest breadth is one-twentieth of an inch, yet it contains three perfect flowers!!*

It is very easy to set the egg on end after some Columbus has shown us how it is to be done. So in vegetable physiology it is easy to understand the organization of plants after the splendid genius of Goethe has discovered and demonstrated the beautiful and instructive theory of *vegetable transmutation*. We wonder now on examining a flower that we did not before perceive the *certain indications* of the beautiful *metamorphosis*. So symmetrical are its arrangements and so strong the analogies existing between its parts and those of which they are mere transformations. I will send you Nuttall's Genera of North American Plants, in which you will find what he says of *poa pungens* in a note and observation on the *poa* genus.

JOHN LEWIS.

#### THE MUSCARDINE.

From the Columbia Republican.

The muscardine has long been known in Europe as a desolating scourge, the ravages of which annually destroy from 40 to 60 per cent. of all the worms hatched. It has continued from the earliest period of the silk culture in Europe, and for years past the attention of the learned, and of the French and other foreign governments, has been directed to this terrible malady, and until recently all attempts to discover its cause, or arrest its progress, have been fruitless. The muscardine resisted all reactives and all the remedies employed. So formidable did it become, that large prizes were offered by academies and by private persons for the discovery of its origin, and a preventive. At length, in 1836, a communication was sent to the scientific academies of Paris, by M. Coquand, announcing the important fact that Dr. Bassi, of Milan, after devoting himself for upwards of 25 years to a series of most ingenious experiments, had at length unfolded the enigma. He discovered that the disease was produced by a *cryptogamic parasite*, the germ of which introduces itself into the silk-worm, occasions its death, and then develops itself on the surface of its body, under the form of a farinaceous efflorescence.

When the terrible muscardine declares itself in a cocoonery, it is transmitted with great facility from one chamber to another, and, if it becomes epidemic, successively from house to house, until the whole village be infected. It spreads itself thence in every direction, and invades a locality more or less distant from those in which it is in communication, either by the assistance of the atmosphere, which will have settled upon it the morbid germs with which it is charged, or by the medium of such animals as dogs, cats, mice, or even flies, which, after having been in contact with worms that have died of the muscardine, retain some of the germs, and afterwards drop them on healthy individuals, thus sowing on all sides the generative principle of the contagion.

One of the most favorable causes of propagating the muscardine is to be ascribed to the contamination of the food. This, in fact, by touching

an infected carcass, communicates the contagious germs to every thing with which it comes in contact; and especially to the leaves of the mulberry, which, instead of furnishing a wholesome nourishment, will thence become the cause of death.

The persons who attend the silk-worms, or the proprietors of cocooneries, ordinarily retain the fatal seed on their clothes, or on the eggs of the silk-worms which they retain for themselves, or expose for sale.

It is the same with those who reel the silk from the cocoons, and who are the more disposed to receive it, as their business is usually conducted near to the cocooneries.

It often happens that among the cocoons which the reellers buy yearly, they meet with some infected ones, that communicate the germs of the contagion to the furniture of their establishment, upon which the silk-worms of the following year will find a certain death. The contagion may likewise proceed from a silk-worm infected by its abode in a case which contains the muscardine principle.

The disease of the silk-worm being neither hereditary nor spontaneous, cannot affect the silk-worm, as long as it is in a state of embryo in the egg; yet infected eggs cannot be hatched with safety, since, by contact with their exterior surface, the worms become contagious, and communicate the contagion to others near them. The number of deaths increase in a progressive proportion, and a general epidemic is suddenly introduced, which ravages the whole manufactory.

This deplorable result, besides depriving the proprietor of his crop of silk, continues to trouble him in the following years; for the germs which have spread themselves over the walls, vaults, floor and furniture of the establishment, maintain a focus of infection, which renews each spring.

Such is the nature of this terrible disease, as described by Dr. Bassi, from the ravages of which the silk growers in the United States thought themselves secure, and perhaps, thus far, our silk growers have lost but little by diseased worms, although we noticed a short time since that an enterprising gentleman of Cuba, during the last year, had lost his entire crop of worms by a disease he could not arrest, and which no doubt was the muscardine; but the note of alarm now raised may arrest its progress, and thus prevent any very disastrous effects to the silk culture, an enterprise of vast importance to this country.

#### DURHAM STOCK AS MILKERS.

From the Cultivator.

Under this title an article, or speech, is going the rounds of our agricultural and political papers, purporting to be from Rev. Henry Colman, which is pregnant with so much error, and, coming from that high and responsible source, of such mischievous tendency, as I believe it, to the welfare of our dairymen and stock breeders, that although seldom appearing before the reading public, I feel bound at the threshold of its circulation, to enter, as the lawyers would say, my caveat against it.

That there may be no misunderstanding in the matter, let me at once remark, that no one can have a higher respect than myself for the exalted

character of Mr. Colman, in all that constitutes the true gentleman and the honest man; and that no individual within my knowledge is so capable to accomplish the responsible and important duties of agricultural commissioner of the proud commonwealth of Massachusetts as himself. I have known him intimately for years, and a knowledge of his worth and of the high authority of his declarations compels me, humble as are my pretensions, to assume an attitude in opposition to his remarks.

The value of the neat cattle in the state of New York, according to the returns of the late census for 1840, is not less than \$15,000,000; and probably exceeding that amount. If to these be added those of New-England, which are at least of equal value, it will present an aggregate of thirty millions of dollars, invested in that branch of agriculture alone. Now, if by adopting an improved breed of these animals, the same number, by exhibiting in their improved forms a superior excellence, and an additional value of 33½ per cent., which is a very moderate advance in the improved races, it would swell this already vast capital into the round sum of \$40,000,000! This fact will at once show that the subject is of immense consequence to our farmers at large, and of no trifling moment to all in its details.

But for the purpose of illustrating my remarks, and even at the hazard of adding to the prolixity of this paper, I will ask you to insert at once the article in question, requesting you also to number each distinct paragraph of Mr. Colman's essay, for more convenient reference:

From the Yankee Farmer.

"As we had not room last week to report all the doings at the agricultural meeting, and as the subject of Durham stock, as milkers, compared with our native cows, is of high importance to farmers, we now copy Mr. Colman's remarks in full, from his own report in the Courier:

1. "Mr. Colman had not intended to enter upon this discussion, but he felt it due to his official relation to the farmers of Massachusetts, to say that he had had the pleasure of seeing the improved Durham stock of the Messrs. Lathrops, of South Hadley, and he thought them eminently beautiful, and evincing great skill and care in their management, on the part of those gentlemen. He had seen many of the imported animals throughout the country; and one of the herds imported for the Ohio Company, which he saw on their way, was truly splendid, and in beauty and perfection of form, far surpassed any thing which he had ever witnessed.

2. "He must, however, in justice, add, that he yet wanted the proof of the Durham short horns being the best stock for our dairies. Seven of the race which he had owned, some full and others half-blood, had been inferior as milkers. The quantity of milk given by many of the animals which he had seen was remarkable; the quality, in general, inferior; though he had found some exceptions, which, he believed, were accidental.

3. "The Cheshire farmers, who were as distinguished as any in the country or in any country for the produce of their cheese dairies, preferred the native stock. From a dairy of eighteen cows, an average of 633 pounds new milk cheese

to a cow, in a year, had been obtained. He had challenged in writing and conversation the owners of the short horns in the country to prove, by actual experiment, the dairy properties of this stock; and he would furnish a list of a hundred cows of our native stock, which had made from twelve to fourteen pounds of butter per week, through the season. He was far from having any prejudices against the improved Durhams. He was an enthusiastic admirer of them; but he wanted their dairy properties tested by actual experiment.

4. "A very distinguished English farmer, Mr. Shirreff, who had made the tour of this country, expressed his regret at their introduction, and pronounced them in his book the poorest dairy stock in England. We could not be said to have formed any distinct race among ourselves, excepting the trials made by Mr. Jacques, and a long continued improvement carried on in reference to milch cows, in another part of the state, upon which he had reported. Much, undoubtedly, yet remains to be done, but nothing in this respect can be effected but by skill, extreme accuracy of observation, and long perseverance.

5. "He thought the Durhams not well adapted to the scanty pastures and negligent habits of many of our farmers. All high bred animals require particular care and the most liberal feed. Two of the finest oxen ever raised in the country were of this stock. One, it is believed, a full blood from Greenland, N. H., weighing over 3,400 pounds, live weight, and one a half-blood, raised in Claremont, N. H., and sent year before last to England, for exhibition. His live weight was said to be 3,700 pounds; and he was pronounced in England, by the best judges of stock, as unrivaled for weight and thrift, and eminently well formed.

6. "The best breeds would soon run out if negligently or severely treated. This race were undoubtedly well suited to the rich pastures and abundant products of the west of Kentucky and Ohio. There they would flourish. What might be done for our own stock by more liberal keeping, was yet to be seen. He had known a calf from a native cow, at four months old, to weigh nearly 400 pounds; and another, at five months old, to weigh 600 pounds. If the improved Durham stock should prove the best for us, and he kept his mind on this subject open to conviction, we could at once avail ourselves of the distinguished improvements of half a century's skill and toil and expense, so liberally bestowed in England. At any rate, the improvements which they had accomplished in England, so obvious and impressive to the most careless observer, read a most important lesson to us, and showed what might be done by skill and care, by judicious selection, by steady perseverance in a regular system, and by liberal keeping; and presented, at the same time, the most powerful motives to exertion and enterprise in a branch of husbandry, acknowledged by all to be of the first importance."

Now, in reference to paragraph No. 1 of Mr. Colman, I have never seen the herd of Messrs. Lathrop, of South Hadley; but if they are what Mr. C. represents, they must be beautiful and valuable animals, and a great acquisition to their neighborhood, although I exceedingly regret that

he did not give the opinions of those gentlemen as to their value and excellence in the Connecticut Valley, and the results of their experience regarding them. A detail of their observations would have been at least more satisfactory than a summary condemnation without a hearing.

Mr. Colman and myself visited the Ohio Company's herd, which he mentions, together in company at Buffalo in 1835, as they were passing through from the sea-board to Ohio, on their passage out. They were in high condition, as few or none of the cows were then in milk, and we had no opportunity to judge of their capabilities for the pail; although I have since learned that several of the cows were great and rich milkers. It must be understood, however, that many of the English breeders of high bred short horns breed only for sale and the shambles, and do not cultivate the milking qualities of their cattle. This is almost universally the case in Ohio, Kentucky, and the western states, where the dairy forms no part of the farming business, and stock is reared mostly for beef; but from the universal tendency of the true short horns to excel in milking properties, when appropriated to that purpose, I can have no doubt they would show as advantageously over the pail as in the stall. When it is considered also, that owing to their scarcity and high value in America, all the females are employed in rearing their calves, and the bulls, instead of being converted into stores for the shambles, are preserved as stock getters, it is evident that comparatively but few examples can be adduced of their real superiority over the common stock of our country as milkers. Still, a sufficient number of specimens have been shown, both in milk and beef, to demonstrate that in each of these qualities the improved short horns have excelled all that has yet been produced of our native American stock.

In paragraph No. 2, Mr. C. remarks, that he wants proof of the milking qualities of the short horns. His own, seven in number, proved inferior milkers, although he admits that several of them, either of his own or which he had seen, were large milkers; but he believes these exceptions to the general rule. That his own cows proved bad milkers proves nothing. What was their blood? Were they of true and improved short horn descent? No data is here given for us to judge of their properties in this particular, and we are forced to pass on to

Paragraph No. 3. The Cheshire and many other dairy farmers have long had an excellent stock of selected native cows, which have been propagated with particular regard to their milking properties for many generations. Mr. Colman has traversed the whole state of Massachusetts several times, and out of the whole number of cows that he has seen among many thousands, he presents a list of one hundred of the native stock which had made from twelve to fourteen pounds of butter per week. He has also challenged, both in writing and conversation, the owners of short horns to prove their dairy qualities.

I doubt whether one hundred thorough bred short horn cows can be conveniently produced at all in the whole states of New-York and Massachusetts, so few are there in comparison with the common stock of the country. Nor do I be-

lieve five times that number of grade cows of half-blood and upwards, can be easily found in either state; but I will venture the assertion, that where such cattle do exist, no matter what their parentage may be on the native side, if they were directly bred from improved short horn bulls, four out of every five of them have proved superior milkers; and at least twenty per cent. better in the aggregate than the ordinary cows around them. And I will also assert, that of the whole number of thorough bred cows in our country, nine out of ten are excellent, if not superior milkers, and twenty-five per cent. above the average native cows. To illustrate this matter, as I have bred a large number of improved herd book animals of the highest blood, within the last six years, as well as many grade cattle from the native, Devon, and other breeds, I will state the results of my own experience, and also the opinions of sundry other breeders, with such facts as a hasty reference will permit.

In 1835, I bred ten or twelve half-blood heifers from three Devon and several common cows of inferior quality and appearance. They were sired by my short horn bull Favorite, bred near Boston, Mass., whose pedigree will be found at No. 2,009, 3d vol. Coate's Herd Book. These heifers proved, without an exception, good milkers; much above the average, both for quality and quantity. In 1836, '7 and '8, I bred several one-half and three-fourth blood heifers, also from Devons and others, which, although many of them were sold, have so far as I have heard from them, proved superior milkers. A part of these were sired by my short horn bull Devonshire, No. 966, 2d vol. Coate's Herd Book. I also had, during the years from 1834 to near the close of 1839, a herd of full bred improved short horns, varying from four to ten milking cows, of which all, with one exception, (and that cow suffered an injury in her udder when young,) were first-rate milkers. One cow gave often thirty quarts of milk per day of good quality. Several of them gave over twenty quarts daily in summer feed, and not one of them gave poor milk, or, as the term is, milked hard. They were individually easy, pleasant milkers, with beautiful silky udders, and handsome taper teats, and were, taken together, much beyond the average run of native cows as milkers. I have now a Durham cow that has made her twelve pounds of butter per week, and of four full-bloods now in milk, every one is a superior milker. I have also five or six half-bloods, all of which are above the average of our native cows, by twenty per cent. in their milking properties.

To corroborate my experience, I need only mention the evidence of such gentlemen as John Hare Powell, of Philadelphia, who asserted to my father, that one of his full-blooded short horn cows had made twenty-two pounds of butter per week for several weeks in succession; Gov. Lincoln, and Messrs. Wells, Derby, and Dearborn, of Massachusetts, who have been the owners of several grade and thorough bred cows; Francis Rotch, Esq. of Buttruts, in this state, who has repeatedly testified to the superiority of his short horns as milkers, and to his entire experience, probably equal, if not superior, to that of any other gentleman in America, of the superiority of the short horns in their purity and in their grades, as milkers. I need not add the names of

many other individuals who have repeatedly testified to these facts, as a reference to our agricultural papers for the last five years will corroborate all that I remark. And last of all, I will assert that Colonel Jacques' fancifully cycled "Cream-pot" breed of milkers, and which I saw in company with Mr. Colman himself, are simply a cross of a thorough bred short horn bull with a native cow, then at Col. Jacques' farm, of good size and appearance, of a deep red color, and with an apparent dash of Devon blood in her veins. His bull that he then used was nearly or quite a thorough bred short horn, and all his heifers were high in that blood. This same stock of cattle, Mr. C. has himself highly recommended in one of his agricultural reports, and we were together living witnesses of the surpassing richness of the milk and cream of these beautiful cows. With a few selected facts, I will close this testimony:

In 3d vol. of Cultivator, page 191. Francis Bloodgood's imported cow (she was a Durham) gave, when her calf was two weeks old, thirty-three and a half quarts of milk per day. Her feed was one and a half bushels of brewer's grains per day, with hay.

In vol. 7, same work, page 132. Mr. Gower's short horn cow Dairymaid, for seven days gave an average of thirty-three and a half quarts per day.

In New Genesee Farmer, vol. I, page 143. Samuel Canby's short horn cow, Blossom, yielded for seven days over thirty-five quarts per day, which produces thirteen and a quarter pounds good butter.

At page 149. same vol. John Weterhull's short horn cow, four years old, gave from twenty-six to thirty and a half quarts of milk per day, and in one week produced eleven and a half pounds butter, and in another week fifteen pounds.

In a Philadelphia paper of 1839. "Colonel Wolbert's cow Isabella, a pure short horn, gave, during seven days 194 quarts, or near twenty-eight quarts per day, which produced fourteen and three-fourths pounds butter of the finest quality." So much for the assertion that "Durham cows are not good milkers."

In paragraph 4, Mr. Colman introduces us to the distinguished English farmer, Mr. Shirreff, who has made the tour of this country. If this same Mr. Shirreff, who by the way I never heard of before, be as profound in his remarks upon our country, its inhabitants and their pursuits, as the herd of English travellers who have hitherto trundled rapidly over it for the purpose, as it would seem, of writing libelous books and holding us up to the ridicule of Englishmen at home, his opinion is little to be regarded. His knowledge of the progress of short horns in his own country may be well estimated, when he remarks "that they are the poorest dairy stock in England." To this remark I need only observe, that nine out of ten of the intelligent English farmers who emigrate to this country, and all British publications on the subject, assert precisely the contrary; for the high grade, and often the thorough bred short horns, have been for many years past taking the place of other breeds for dairy and milking purposes in the grazing counties, and near the large towns and cities. That he

should regret the introduction of any thing tending to advance our agriculture, and our wealth, is altogether natural in an English book-making tourist. I am only surprised that a gentleman of Mr. Colman's shrewdness should be thus easily deceived. As to the "distinct race of American cattle" to be yet formed, the end of all this is to be seen in the continual efforts at blending incongruities by those experimenters who strive, without an accurate knowledge of their subject, to produce what is already better made up to their hands in the improved breeds now extant. Such experiments, as they live and learn, have been always abandoned as impracticable and visionary. There is, nor can be, no such thing as a "distinct American breed," made up as all our cattle are from selections from all parts of Europe; nor, if our agriculture is to be, as we hope, progressive in its excellence, is it desirable. Our cattle should improve with our general agriculture. The last sentence of Mr. C.'s remark is very just, and concedes, as we view it, the gist of what we commend.

In paragraph 5, Mr. C. gives us the only good reason why Durhams should not become the stock of New-England, to wit: the poverty of its soil, and the negligence of many of the people! Truly a very broad admission, hardly just, indeed, to the sough farmers of New-England, and not at all within the desideratum for which the advocates of short horns contend:—improved husbandry, improved care, and improved stock. If, upon lands, a thousand acres of which will scarcely graze a goose, and from which the very vermin instinctively flee to escape starvation, the beautiful short horns are to be doomed to pine, without care, and without sympathy, I at once admit that the less of them the better. Nor do the miserable animals of the native breeds even, which are doomed to a wretched existence on those "scanty pastures," exhibit any signs of thrift as they daily suffer from the "negligent habits of their keepers." True, a long course of neglect and starvation endured by their ancestors, and perpetuated for many generations anterior to their own existence, may render their wretchedness more tolerable than it would that of a better animal; but what advocate of any sort of improvement is content to bind himself to such hopeless sterility? Did we desire a race of animals that would *starve* the best, we could at once make an importation from the Shetland Islands, and establish a *Shetlo*—"American breed" that would bid defiance to neglect and poverty, and flourish amid both frost and desolation!

But this proposition is not within the category of our system. We hold, that if land be worth cultivation at all, it should be at least in a reasonable state of fertility. It should yield in any event a tolerable share of its various products under good and kindly attention with which to feed well the stock of the farm. If cows are not to be decently fed, by no means keep the Durhams, or any other valuable breed. But if it be intended to give "value received," to feed well, and pay attention to your stock, and there is no other way to make any kind of stock profitable, then let the breed be as good as possible, and of as high a grade in blood as the nature of your soil and the climate will permit. The admissions made before the close of this paragraph, of the enormous



weights of the Durham ox with good keeping, admit to the fullest extent all that we claim, when abundance of feed is given to the animal.

In the 6th and last paragraph, Mr. C. doubts whether the Durhams are, after all, not the best stock for us to have, and candidly admits that his mind is yet open to conviction. Now this, after making the round assertions and denials that are above exhibited, is not exactly what we should expect from one of his observation and astuteness. It is indeed too much in the vein of the old adage: "Hang him first, and try him afterwards." In this last paragraph, all is admitted that the advocates of the short horns desire. We have never asserted that they would produce great quantities of beef, or of milk, without sufficient food; nor would they thrive under continual ill treatment, neglect and abuse; nor, indeed, will they bear so much starvation and ill treatment as some of our native cattle; but we do fearlessly assert that either thorough bred or grade short horns will produce more beef, and more milk, each in their own proper time, with the same quantities of grass, hay, or other proper feed, than any breed of cattle ever introduced into this country; and so have they thus far done in England.

My own cattle have never been highly kept. On the contrary, owing to my farm being at some few miles distance from my residence, and therefore not having my daily attention, my herd always received but ordinary care, and sometimes, I regret to say, not even that. But I do say, that so far as my experience has proved, they have, from the highest bred Herd Book heifer, down to the lowest grade, (never less than half blood,) been as healthy and as hardy as the common stock of the country, kept side by side with them. The opinion, therefore, that Durhams are to be rejected for want of hardihood, or constitution, is but a prejudice that deserves to be exploded.

Still I am no enthusiast in this matter. I would not recommend every farmer to introduce into his farm the Durham cow. On the contrary, on very thin and light soils, I would not introduce them; nor any thing else that ever lived on a luxuriant one. But I do say, on lands natural to grass, which afford a fair yield of pasture and of hay, where either the dairy or the fattening of beef, or even the rearing of cattle for sale, be the object, judging from my own experience, and corroborated by that of others who have tried a single cross upon our native, or any other breed of cattle, no matter what, even up to high grades, the Durhams are altogether the most desirable, both for appearance and for profit; with the exception, perhaps, of the Devonshire, if the climate be very rigid; and they are no milkers. Were I a dairyman, and desired to grow up a race of the best and most profitable milkers I would select the best native cows within my reach, then obtain a thorough bred short horn bull of a good milking family, and raise my heifers to as high grades as in their natural course would be produced, always using a thorough bred bull, for in no other way can the excellence and the true characteristics of the race be perpetuated. Did I, however, admit of any other foreign admixture, it should be a cross of the Devon to give additional snugness to the form; and then but a single cross, for more

than that would degrade the milking qualities of the herd. These animals, bred as they would be from native cows, would inherit their constitutions and habits, and become identified, as much as the most ordinary stock, with our soils and our habits of keeping. In this way should we at once gain all that we desire, without sudden or prejudicial change.

In 1835, my father imported a most beautiful and valuable cow from England, one of the finest animals and best milkers I ever knew; a very hardy, thrifty, and easily kept animal. She brought up three very superior bull calves, all from short horns. They were like herself, of peculiar conformation and character, being the most compact in their figures, possessing more weight in a given compass than any animals I ever saw. In the fall of 1839, the cow, and her then sucking bull calf, were sold to Norman C. Baldwin, Esq. of Cleveland, Ohio, for \$800; her two year old bull calf, "Red Jacket," to Mr. Sullivan, of Columbus, Ohio, for \$400; and her yearling bull calf, "Sam Patch," to J. H. Hepburn, Esq. of Jersey Shore, Lycoming co., Pa. for \$200. Had I at that time known the exceeding value of that family of short horns, I should certainly have reserved one of them. My bulls have proved in the highest degree valuable as stock getters, stamping their calves in the first cross with deep characteristics of their own blood, and no doubt, laying the foundation of a race of milkers that will yet be famous in their respective localities. They are estimated as they should be, almost beyond price. I name these particular animals, because they develop in all points of hardihood, endurance and kindly feeding, the valuable characteristics we desire in our farming stock, and fully corroborate all that I have remarked of rearing up a native stock from judicious crosses of pure short horn bulls.

Many years ago, the agent of the Holland Land Company, Mr. Otto, purchased a thorough bred short horn bull from Mr. Powell, of Philadelphia, for the benefit of the settlers of the company lands in the counties of Genesee, Cattaraugus, and Chautauque, comprising some of the best grazing and dairy counties of the state. As the services of the bull were obtained for little or nothing, and as he was kept in successive seasons in each of the counties above named, a general sprinkling of his stock was soon scattered throughout those regions, and some as high as three-quarter bred animals were raised from his progeny. The bull lived many years, and proved an excellent stock getter. Many of the cows now ranging about the streets and commons of Buffalo and Black Rock, which have been brought in and sold from these counties, are of this stock, and are distinguished for their superior appearance, and, so far as my inquiries have extended, they are of the finest quality as milkers; and yet none but those who are conversant with the Durham blood know that they are any thing but common cows. These cows are celebrated among many of our dairy farmers for milkers; and numerous fine and extraordinary fat oxen that have been slaughtered at Buffalo from the surrounding country, were descendants of the "Otto bull," either of the first or second generation.

I have now done with the speech of Mr. Colman, which, for his own sake, and the welfare of



our agriculture, I regret he had not more maturely considered. Yet, if he be still sanguine in his confidence of the superiority of the Massachusetts "native stock" as milkers, could the thing be made practicable, I would gladly make a trial of merit by actual test. I would propose that Mr. C. or his friends produce ten or twenty cows, which should be a fair average of the native stock, without admixture of foreign blood; against which, I would produce a like number of grade, or thorough bred short horns, of average quality, or taking them as they rise, in any fair herd. The time of their calving should be noted, and the cows should be of nearly corresponding ages—the trial should commence on the first of June, and continue one month; the cows all to be kept in one field, or in as good grass, and on pasture only, as each party should please, if not, convenient to bring them together. The quantity of milk should be accurately weighed, and the produce, either of butter or cheese, duly registered. When the trial should be fully made, the winning party to be entitled to the whole herd, with the product, after paying expenses. If the advantage should be on the side of the native owners in value, as it probably would, each animal should be appraised, and a sufficient sum to make up the difference should be deposited to render the premiums thus submitted of equal value. This would test the whole question, and give it sufficient of interest to engage in the trial with spirit. The season is, perhaps, now too far advanced to make the trial this year; but if this proposition be accepted, I would enlarge it, and name the first day of November next, for selecting the animals on both sides; they should be then placed together on one farm, and both subjected to the same treatment through the winter, and kept together till the trial was thoroughly made, which, if either party preferred, might extend through the next season, or until the first day of October following.

If it be objected, that this proposition will incur too much expense, or inconvenience, I will at once propose that Oneida county, in this state, shall be the place of trial; and that myself, or my friends, the advocates of the short horns, will furnish a farm for the operations, the fitness of which shall be assented to by the other party. The importance of an accurate knowledge on this subject is a sufficient object for such a trial, and it is perhaps the only method of testing this mooted question fairly. It will be readily seen, therefore, that this proposition arises in no spirit of banter, or gambling, but in that of an earnest desire to settle an important and doubtful point, of great interest to our agriculture generally.

I may, at a future time, pursue this subject further, but have for the present trespassed sufficiently upon your patience.

LEWIS F. ALLEN.

Black Rock, April 10, 1841.

#### SALES OF BERKSHIRES.

From the Cultivator.

Mr. Lossing, of this city, informs us, that he has recently sold his famous breeding sow *Maxima* to Mr. Curd, of Kentucky, for the handsome

sum of \$300. The animal is well known to breeders of Berkshires, as one of the largest of her kind in this country. Mr. Lossing has also sold his imported boar *Neuberry*, to the same gentleman, for \$200. He was shipped a few days since, and weighed, including cage, 880 lbs.

#### THE FARMERS' REGISTER, AND ITS COURSE IN REGARD TO THE BANKS.

Our good and highly esteemed friends, the editors of the Richmond Compiler and the editor of the Petersburg Statesman, have lately gotten into a small controversy, in which our journal is the matter in question; and in their cuts and thrusts across our body, the blows do not reach the antagonists, but fall short upon us. To the first article, of the editors of the Compiler, we took not the slightest exception. Their kind expressions of approbation we appreciated, as the unsought, disinterested, and candid opinions of friendly and favoring judges. Their exception, conveying censure on a particular point, did not at all lessen our gratefulness of feeling for the previous approving expressions, nor abate one atom of our always kind feelings towards our friends of the Compiler; and, quite willing to submit to their censure, or to let it pass for what it was worth, we did not deem it necessary to reply, for the purpose of defence, and still less for recrimination. But our also good friend of the Statesman, by a jocular squib, or paraphrase of the censure, has drawn forth a rejoinder, of which we are still the subject, and which seems to require something of defence; and which we shall offer in all courtesy and kindness, and in the same friendly spirit towards our friends of the Compiler, as is manifest throughout their censure, and also in their general praiseworthy deportment towards those whom they oppose. If we fail to convince them (as is most likely) that they have viewed our course through a false and distorting medium, we trust that we shall at least leave them satisfied that we view them as much our friends as before, and as we have long had reason to deem them. But lest we should fall into the unfair mode of controversy usual with most editors, (and which we have always avoided,) of replying to an opponent before presenting the article replied to, we will here present at length all the three articles referred to, and then submit our defence.

"Mr. Ruffin's Register, of date May 30th, is received. Its table of contents indicate much useful matter for the farmer; and we trust the Register is meeting the encouragement it deserves. We beg leave, however, to except to some sweeping phrases which the intelligent editor is pleased

sometimes to employ when speaking of banks, and which cannot subserve the purposes of candid and fair discussion.—*Richmond Compiler*.

"The Compiler contains much useful matter, and we trust is meeting the encouragement it deserves. We beg leave, however, to except to some sweeping phrases which the intelligent editor is pleased sometimes to employ when speaking in favor of banks, and which cannot subserve the purposes of candid and fair reasoning."—*Petersburg Statesman*.

"*Farmer's Register*.—The Petersburg Statesman takes up the cudgels for the editor of the Register, and retorts upon our "exception" to certain sweeping phrases in the Register against banks, by charging upon us the employment of like phrases in favor of banks. Now we reckon Mr. Ruffin will hardly thank our friend of the Statesman for such a defence; our errors, admitting the justice of the retort, are certainly no justification for the Register. We feel assured, however, that the Statesman cannot find in our journal arbitrary conclusions or denunciations on this subject, that will fairly offset some we could point out in the Register. But we object thoroughly to a contrast between the Register and our paper. We claim as a privilege to indulge a degree of flippancy which the Register is on every consideration prohibited from adopting. We have a right to be slipshod philosophers and political economists—the Register none. Our daily journal requires an expedition and despatch that does not afford time for grammatical propriety, let alone mature reflection—a momentary excitement cannot subside ere an indiscretion it may induce is held up before the world—there is no time for sober second-thought, no time for better judgment to modify, or for taste to improve. But the Register, a monthly journal, conducted by an accomplished scholar and intelligent gentleman, with time for reflection, for leisurely composition, and then for pruning according to critical propriety and even adding the charms of beauty—we say the Register can urge no such excuse, and can claim no such right. We have always been proud of the Register as a *southern monthly*; for its ability and its valuable scientific and practical information: and we must contest every inch of ground when it comes to encroach upon our commons. But we repeat we do not suppose Mr. Ruffin would set up a defence similar to that of the Statesman, and may be we are saying more than necessary.

"By the way, we see that the Lynchburg Virginian has expressed itself somewhat in the same vein we did, without possibly having seen our 'exception.' It says, 'Has Mr. Ruffin changed the character of his Farmers' Register? Instead of telling the farmer by what means he may draw wealth from his banks of earth, he seems disposed to make an exterminating war upon banks of discount and deposit.' [Which were in fact advocated, instead of being warred against.—Ed. F. R.] His essays may be very original and profound for aught we know; but it seems to us he ought to select some other channel to convey them to the public."—*Compiler*.

Now the whole question is, whether, in considering the operations and effects of banking and

paper currency, we have altered the plan of the Farmers' Register, or varied in an important or censurable degree from the designed and proper general procedure. We deny the justice of the charge, and appeal, without fear, to the facts of the case, for our justification and acquittal.

In the earliest published prospectus of the Farmers' Register, and which was inserted in the first number, (p. 64, vol. 1.) and republished often afterwards, the subjects to be embraced in the work were stated and numbered under eight distinct heads, as follows:

1. Original communications of experiments, observations and opinions on agriculture, gardening, and domestic economy.
2. Selections from the best periodical publications on agriculture, European and American, and from such other agricultural works as have not been published in this country, or are not generally accessible.
3. Reviews or notices of agricultural works.
4. *The discussion of such subjects of political economy as are connected with the preservation and support of the interests of agriculture.*
5. Chemistry as connected with agriculture—and, with the same limitation, botany, mineralogy, geology and natural history.
6. Reports of the topography, soils, minerals, peculiar manures, and actual state of agriculture of every county of Virginia, from which such information can be obtained.
7. The consideration of public improvements by roads, railways and canals.
8. Discoveries in science, or the arts, and the occurrence of other events that are considered likely to affect the interests of agriculture."

Now of these eight classes of subjects, the two first only relate exclusively to agriculture or domestic economy, to which heads the editors of the Virginian and the Compiler seem to think we are pledged, and bound to confine our articles exclusively. The third class would be generally, but not exclusively of that description; and the five other heads are of other classes of subjects, all at least as remote from practical agriculture as the consideration of banking frauds, and the bearing of the banking system on agricultural interests. But this is not all. The fourth head (copied in *italics* above) distinctly embraces (and was designed to embrace) the consideration of this, as well as other like subjects; and if we had failed to treat of this one, and boldly and fearlessly, when required by the suffering interests of agriculture, we should have forfeited the pledge there given, and have proved recreant to that noble cause, to the support of which we have devoted so many years of our life. We unfortunately differ with our friends the editors of the Compiler, and the Virginian, as to the bearing of this paper system on agricultural interests. They think it highly beneficial—and thinking so, we would not blame them for advo-

cating it, whether they were conducting commercial or agricultural papers. *We*, on the contrary, deem the system dishonest, flagitious, and especially injurious to agricultural interests, as well as to the general interests, morals, and happiness of the people. Surely then we are right, upon every ground of duty and of pledge, expressed or implied, to attack and expose this iniquitous system. It is possible, and probable, that, in attempting this contest, almost alone, against such powerful and overwhelming odds, we have been rash and imprudent, and have risked our individual defeat and destruction, without hope of success for our cause; but if so, and our cause be good, and the quarrel just, the blame and the disgrace should be on those who, approving the course, hang back from the conflict—and not on us, who have dared the unequal contest. We may, and probably have, argued feebly and impotently; but, if so, we have perhaps written or selected as badly, and certainly as voluminously, on all these “five points” of (what our censors ought to pronounce equally) illegitimate discussion, without being charged by these editors, or any other persons, with “travelling out of the record.” Indeed, we must plead guilty of having admitted very many articles in these volumes, which we deemed likely to instruct or entertain our readers, but which, if tested strictly by the plan, would belong to none of the heads of subjects stated in the prospectus. And why were we never blamed for these admitted deviations? Simply because the deviations were upon immaterial subjects, the course of argument on which could not affect the interest of any reader, or any class of the community.

But even if our prospectus had not distinctly stated that various other subjects besides matters of practical agriculture were to be embraced in our journal—and even if our procedure had been conformable to the prospectus, from the beginning—it would have been absurd to expect to fill all the 768 large pages of each of our annual volumes, with matters merely and exclusively agricultural. Throughout our eight completed volumes, a large proportion of each volume, and generally of each number, has been filled with other subjects than those of practical agriculture; and articles on no other questions have been deemed more important, and more willingly admitted, than “the discussion of such subjects of political economy as are connected with the preservation and support of the interests of agriculture.” If the present condition of the banking system of this country does not strictly come within the imperative requisition of those words of our prospectus, then we are unable to conceive any possible case that could be therein embraced.

Our friends of the Compiler have never before objected to the large proportion of our pages which have been devoted to the many subjects we have before thought proper to embrace; neither to the discussion of the policy of public works, roads and canals—(though we, like many others, went mad on that subject, and have paid dearly for our great folly—) nor to the treatment of subjects of natural history, though totally unconnected with agriculture—nor to any previous questions of political economy. It is only when we have made war upon the paper banking system that our friends deem it necessary to censure and protest against what they deem an illegitimate procedure, and a departure from our proper limits. Now, if we had taken an opposite course, and, like our brother agricultural editor of the *American Farmer*, had taken the strongest ground in favor of the paper credit and banking system, we ask of our friends and brother editors, and appeal to their candor for the answer, whether they would have thought it necessary to check and reprove us for departing from our proper course and vocation? We may fairly infer not; for we have never before heard of any one, editor or reader, who found fault with the subject so undertaken in the *American Farmer*, as unsuited to an agricultural journal. We copied that piece at length, (beginning at page 156 of our current volume,) and endeavored to meet its argument; but we did not in the least question the propriety of the subject being introduced by the editor, or his sustaining that side which he deemed most beneficial to agricultural interests. We, on our part, have but done the same; and even if we had no better warrant, we might justly thereupon claim the like privilege, and equal toleration.

We have confined our defence to the main question, (the propriety of the discussion of the abuses of banking, and the effects on agriculture,) and do not mean to be drawn off to subsidiary and immaterial issues. We shall therefore not defend the manner of our argument against the censure of the editors of the *Virginian*—especially as their few words of censure show that they had not read the article censured; nor could we expect them to read what would be so unpalatable. Another minor objection of our friends of the Compiler is the harshness of our expressions and denunciations. This plain dealing is called for by the subjects treated. We have ever been accustomed to call things by their right names, so far as we can judge of them; and we will not seek for “holiday terms,” and polite and deferential expressions, to designate what in private individuals would be

called lying, fraud and swindling, because the operators referred to happen to be corporate bodies and bank officers and boards of directors.

But, it may still be asked by those who condemn us, why, of late, fill so many of the pages of the *Farmers' Register* with this one subject? We are sensible of this objection being proper; but it could not well be otherwise, while publishing the long article on the abuses of banking which is now completed. Our object was to present the subject in the plainest possible manner, and suited to attract the attention of the farmers of our country; and to have occupied less space, or embraced more time in publication, would have weakened the desired effect.

Our opinions on the evils of banking are not new. They date from our boyhood. Neither have they been hidden from the readers of this journal, as sundry of its articles will testify, any more than from our associates. But it is very true, that, until recently, no regular, systematic, or even frequent opposition was shown to the system; and for this sufficient reason, that *all opposition was then deemed hopeless*. But not so recently, and now. There is good ground on which to build hopes of the reformation, if not the utter destruction, of unsound and irresponsible banking, and the fraudulent paper money system; and while hope remains of that result, we will lend our feeble powers to aid its consummation; and shall entertain no doubt or distrust that, if the victory shall be achieved, its greatest fruits will fall to the share of the agricultural interest, in the subsequent entire security of agricultural property and labor from being, as heretofore, appropriated at will by privileged corporate depredators, operating by means of legal privileges, and the fraud of irredeemable paper money.

While we receive the reproof of the editors of the *Compiler* as an admonition from true friends, and have replied to it sincerely in the like good feeling, we trust that they will permit us to give them, in return, a friendly hint in regard to the subject in controversy. We have not only perfect confidence in the friendly disposition of the editors of the *Compiler*, but also in their good judgment, in all matters with which they are conversant. But we beg them not to submit their own excellent judgment, in our case, to that of other persons, who, under the profession of being sincere friends to agricultural interests, and to the *Farmers' Register*, as their advocate and exponent, really are aiming to silence our publication, not (as they profess) because of their devotion to the agricultural, or to the general interests of the country but because of their devotion to, or con-

nexion with, the paper banking and borrowing interest. It is this class which furnishes the main support to all commercial newspapers; and it is to the most intelligent members of this class that such newspapers naturally and properly look for information and advice, and suggestions in commercial matters. We fully admit the competency and superior ability of such persons to prompt and advise the measures that will best promote their own interest, and that of the class to which they belong. But we beg our friends of the *Compiler* to have a reasonable degree of distrust and caution, in regard to the opinions of all such persons, when they undertake to act as the advocates of agricultural interests, and as censors of any one of the very few persons or publications that will dare to denounce and expose the plundering of agriculture by the fraudulent paper money system.—

ED. F. R.

#### THE NEW THEORY—SAVING EGGS.

From the Journal of the American Silk Society.

The principles of the New Theory require the most regular division of eggs, as it respects the time they are laid. To carry out those principles perfectly, all worms hatched on a particular day should be kept separate from all others; all that moult in one day should likewise be separated from the others. So also in saving eggs, the millers that begin to lay eggs on a particular day should be placed upon particular papers, so that all the eggs on any one paper will be laid on the same day. The papers should then be marked with the date at which the worms that produced the eggs were hatched, and also with that of the laying of the eggs. Thus, a lot of worms is hatched on the 10th of May, and the moths begin to lay eggs on the 20th of June; the marks on the papers will be "Hatched 10th May, 1841—laid 20th June, 1841." This may seem a troublesome business, but really it is not so. All the trouble will not occupy as much time as is required in the above description of it. In practice it is nothing. When the millers begin to lay, all you have to do is in the morning place as many of them on one paper as it will hold, and mark that paper as above with a pen. Next morning take away the paper of yesterday, (as the moths will all have finished laying,) and place fresh paper in its place, and fill it as before; taking care, of course, to dispose of all the millers in this way each day. It is a curious fact, that nearly all insects hatch, moult, and commence all important changes and operations in the morning, and this is particularly the case with silk worms.

We are not in the habit of requiring particular processes, without giving good reasons for it. The reason, then, of the above requirements, is as follows: suppose a lot of eggs occupy a week in hatching, which is not unfrequently the case, although we always recommend that none be saved but those of the 2d, 3d and 4th days' hatching. If all these worms are kept promiscuously together, they will also require at least a week to

mount for forming cocoons. That is, those that hatched the 1st day will mount first, those hatched the 2d day will mount the next day after the first mounted, and so on to end of a week, or probably ten or twelve days. The consequence is, some worms are spinning cocoons, some feeding, and some even in their last sleep, all at the same time producing great confusion and much waste of time and foliage. But the evil does not stop here. The cocoons having been spun thus irregularly, will also be in confusion. The moths of those first commenced will be cutting out, or ready to do so, before the last have half finished their cocoons, and thus in any event a considerable loss will be sustained: for if you kill the chrysalis in time to save the first formed cocoons, you kill the worms in those which have half finished; if you wait for the last to finish, those of the first will cut out and spoil their cocoons. But if eggs of one day's laying only are on each paper, nearly if not all will hatch simultaneously on the same day; and it is also a curious fact, (developed by the New Theory,) that several parcels of eggs laid, say on the 1st, 2d, 3d and 4th of July, of last year, will hatch this year in the same rotation, if they have been kept and treated in all respects alike. It is expected to be proved, that the only reason why all parcels of silk-worms' eggs require from four to six days to hatch, (from the time they first begin till the last hatches,) is simply that the same number of days were occupied by the moths in laying them. It is freely admitted that this looks like hair splitting and, as has been said, "French refinement," but when the principles of the New Theory shall have been thoroughly understood, and critically examined, the above will be found to be nothing but natural results from natural causes.

One more remark. The papers should be kept as clear of filth as possible, especially the liquid discharged by the moths before they begin to lay eggs. This can be done by suspending the papers perpendicularly on the sides of the room. The moths will not fall off till they have done laying, and when they discharge the liquid it will fall upon the floor. The reason the eggs should be free from all such filth is, that it, not possessing the principle of life, as the eggs do, soon putrefies and evolves deleterious gases, which in close vessels may destroy the vitality of the eggs.

G. B. S.

#### FIRST FRUITS OF THE SEASON—SUCCESS IN SILK-MAKING.

From the Journal of the American Silk Society.

[The following letter contains most gratifying intelligence. The respected writer will excuse its publication, on account of the cheering hopes it will encourage. The writer of this letter has now feeding (a portion probably spinning cocoons) about 600,000 worms. He practises upon the principles of the New Theory, and uses lime freely, according to the lately discovered virtues of that article. The success of Mr. C., mentioned in the letter, with his first and very early crop, is peculiarly gratifying, and shows what can be done under the worst possible circumstances, by skill, care and persevering industry. His ex-

perience with the use of lime establishes the great value of that material as a preventive of disease. The successful experiment of keeping a few worms in a temperature of 100° mentioned in the letter, should not induce any one to suppose that they will certainly succeed equally well with a large crop. There were too few worms, and probably no rubbish, to cause injury from foul air. We throw out this hint merely as a timely caution. It is possible that silk-worms may be capable of enduring this high degree of heat for a period of seventeen days, but we do not conceive it at all probable—at all events it would be a difficult matter for their human attendants to do so. It is a curious fact, however, and ought to be further experimented on.—ED. SILK JOUR.]

Virginia, May 23, 1841.

*My dear friend,*—For the past week the weather has been very fine, and the silk worms have sensibly felt its genial influence. I ought to have some beginning to spin by this time, but the cool wet weather has retarded their progress very much. I hope it will be better now. My worms look exceedingly well notwithstanding. I spent a night with C. C. during the early part of the past week. He is in high spirits. A brood of early worms, amounting to about 30,000, had nearly all ascended. He had kept them in his hatching room, at a temperature of about 76°. One or two hundred which he kept on the mantel-piece immediately over the fire, in a warmth of about 103°, began to spin in 17 days. I never saw finer cocoons than they all were. He thinks he can now effectually banish disease from his cocoonery by the use of lime. He says he would not be willing to express fully what he really thinks of its effects and advantages. He will proceed on your system in regard to hatching, though I do not think he holds what is vulgarly termed "book learning" in very high estimation. But his incessant application will enable him to do as well as any man. He has thought of an entirely new thing for the worms to spin in; namely, whortleberry bushes.\* A bundle of them set up and spread at top like broom corn, displays the cocoons to great advantage, and the worms are highly pleased with the fixture. I have heard from no other cultivator; but whenever I gain any information, I will communicate it to you.

I have had a great many eggs to hatch this spring; and I have uniformly observed that the difference of even a few days, in the times of hatching last year, shows itself now. I have been almost astonished at it. The eggs too have not been on ice, and have been kept under precisely the same circumstances.

\* Our respected friend is mistaken in supposing this a new thing. Whortleberry bushes were often used in the early days of the silk experiment here, say ten to twelve years ago. The editor used them, as well as several of his acquaintances. They answered remarkably well.—EDITOR SILK JOURNAL.

## FOUNDERING.

From the Kentucky Farmer.

This disorder is produced by several causes. It is certain that the greatest part of all diseases, except in cases of accidents, proceeds from the derangement of the stomach, which may be compared to a still, that after having extricated all the substance from our food, distributes it in each part of the human and animal body. If the functions of the stomach are arrested, from whatever cause, the whole body feels it, according to its predisposition; this is called sickness, and is more or less dangerous, according to the weakness or strength of the natural constitution. The horse, although much stronger than man, having been taken from the state of nature, has shared the laws of civilization and been subjected to many of its evils by his owner; for in his primitive state, he knew certainly very few disorders, if any; hunger, thirst, excess of labor, and above all, neglect, contribute to all the disorders of this animal. We should never forget that although some of the brute creation seem to have been formed to help and delight mankind, yet the abuse of their faculties is a great fault, to say no more. In this, as in many other instances abuse is punished by privation and loss. Moderate labor, good food and care will prevent many accidents, and keep a just medium between the state of nature and the social order, into which the horse has been admitted: 1st. One of the causes of foundering is the exposure of the animal to all the changes of weather, without either stable or shed, in which he could be sheltered if he wants it. 2d. If after hard labor of any kind, and sweating, the horse is left in the rain, or even in the sun without having been rubbed dry, and not suffered to cool gradually. Foundering is peculiar to animals whose foot is entirely wrapped in the horned hoof, it is the swelling and obstruction of the blood vessels in the interior of the hoof, sometimes in one foot only, more often in two, and even in the forefeet, or it attacks them one after the other; when the hind feet are attacked, the weight of the body bearing on the forefeet, and the horse cannot walk without much pain, and must not be urged to do it; it is then necessary to separate him from the others. Besides the external symptoms, there is a great heat in the pastern, fever, distate, and costiveness. A suppression of perspiration, water drank to excess, sometimes on an empty stomach, during a long and hard ride; eating too much corn or green grass, perhaps a disposition of the body, may be considered as the immediate causes of foundering. If there is much fever, as is generally the case, the horse must be bled copiously, and the blood received in a vessel; so as to know both the quality and quantity that is drawn; injections must be given; very little hay, no corn, and bran or meal in his drink; the upper part of the foot above the hoof shall be rubbed with strong vinegar and sifted soot, even make poultices of it, and change them several times in the day, (clay mixed with strong vinegar is excellent.)

N. B. The application is good, also, for any person whose foot is sprained.

If the horse is shod, he must be unshod as soon as possible; he must be purged with gentle medicines, this point cannot be too much insisted upon,

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as harsh drugs are pernicious to man and beast, and wear out the best constitution. Such a treatment will soon cure the horse if done immediately, for like many others, it is easy to cure if taken in time, otherwise it may cause the loss of the hoof, and perhaps that of the horse, who is, at least, rendered useless for a long time, if not for ever. To do every thing in time insures success to a farmer, and as horses are his principal help, he will gain much by attending to them so as to remedy any of their disorders as soon as he finds them out.

Early rising and going to the plough, or on a journey, at three or four o'clock in the morning, in the summer, stop at ten, and begin again at three or four, afternoon, until night, is the best mode of working for man and beast, other work may occupy the hands in the interval.

W. MENDELLE.

## WORK OXEN.

From the Kentucky Farmer.

I see that a number of persons think that the Durham cattle do not make good oxen. I have had more than half the work on my farm performed by oxen ever since I commenced farming, and have found it much most profitable to work oxen with Durham blood in them, generally from half to seven eighths. They walk well, are very strong and are more gentle and docile than almost any other cattle, and then they are so easily turned into beef whenever we wish to part with them. I always have sufficient employment for my work oxen to prevent them from getting too fat to work well. The formation of the Durham stock shows great power, and their walk when lean is very good. I have frequent occasions to send an ox cart to Lexington, and they always make the trip in a day—the distance there and back is twenty-eight miles. I work them in yokes and bows.

SAML. D. MARTIN.

Colbyville, Ky.

## THE BOARD OF AGRICULTURE.

From the Richmond Compiler.

The board of agriculture, for the appointment of which a bill was passed by the last legislature, has been appointed by Lieut. Governor Rutherford, and their names will be found below. The authorization of this board was an act of uncommon liberality of the last legislature—and will no doubt cause it to be gratefully remembered for generations, we may say ages to come. Most wisely, most generously did they authorize the governor to select two individuals from each of the four great sections of the state, who were to meet yearly alternately at one of the principal towns or cities of the different sections, discuss agricultural and other interests, decide on the best policy for the Old Commonwealth, and report their views and decisions to his excellency, to be laid before their sapient legislatures at their next session. Now in consideration of so important a privilege to said board, (a privilege

plainly denied unless so granted,) in view of the towering honors, thereby bestowed, the legislature in their wisdom thought it would be altogether superfluous to append a small *per diem* allowance for the labors of said board, for their absence from home and consequent neglect of domestic concerns. Which conclusion was very just, very charitable—conferred heavy obligations upon the agricultural community in general and upon the board in particular. With such wise and liberal legislation who can set bounds to the improvement of the Old Dominion?

*Board of agriculture appointed by the executive.*

For the division of the state lying upon tide water:

James M. Garnett, of Essex, and  
Edmund Ruffin, of Petersburg.

For the division between the head of tide water and the Blue Ridge mountains:

James Barbour, of Orange, and  
Richard Sampson, of Goochland.

For the division between the Blue Ridge and Alleghany mountains:

Nathaniel Burwell, of Clark, and  
Edward Watts, of Roanoke.

For the division west of the Alleghany mountains:

Joseph Johnson, of Harrison, and  
Peter H. Steenberg, of Mason.

**MONTHLY COMMERCIAL REPORT.**

For the Farmers' Register.

At this season of the year the tobacco trade is the only very important one in Virginia, our markets being almost bare of other descriptions of produce. From this cause flour has advanced to \$5½, and corn to 60 to 65 cts., per bushel. Cotton also maintains its price here of 9 to 11 cts., although it has declined in other markets, and the accounts from Europe are very discouraging. The manufacturing interests generally in Great Britain and in this country are in a depressed condition. A diminished product of 600,000 bales cotton (compared with the preceding year) is sufficient to meet the greatly reduced demand. Great distress prevails in the large manufacturing districts of England; in this country the extreme cheapness of provisions prevents its being felt.

The price of tobacco declined in the early part of the month, but has recovered since the supply has fallen off, and ranges from \$4 to \$10. A decline in New Orleans, where a large stock had accumulated, was followed by sales in a short period of 10,000 hhds. at \$3½ to \$8½.

The wheat harvest is now in progress and commenced with favorable prospects as to quantity and quality, but the weather is now adverse.

The legislatures of the United States and of Great Britain have now before them measures deeply affecting all interests. The establishment of a national bank, the revision of the tariff, and the distribution of the proceeds of public lands, engage the attention of congress; while a change of the corn laws and a revision of the tariff are under discussion in parliament. The results are

looked to with intense interest by all parties and all classes. Exchange on London 12 per cent., on New York 4 per cent. premium. X.

June 25, 1841.

**SUMMARY OF NEWS.**

*Saturday, May 29, 1841.*

The Caledonia steam-ship arrived at Boston on the 19th, in 14½ days from Liverpool, bringing accounts 14 days later, and up to the 4th inst.

Nothing had been heard of the President steam-ship; and it is almost certain now that it has been lost.

The British ministry had been defeated on two questions, in the House of Commons, on the Irish Voter's Bill. But instead of resigning, as usual in such cases, they have announced the making the repeal, or a great modification, of the corn-laws a cabinet measure. If the popularity of this reformation should save to the ministry their places, their success in this respect will produce very important benefits to American agriculture.

The London Chronicle (Radical) of the 3d instant, says:—

"The sensation produced by the Government notice of Friday night on the corn-laws is rapidly extending through the country. Every where it is the signal of excitement and determination. By the monopolists it will never be forgiven, and by the people it will never be forgotten. Ministers have fairly thrown themselves on the nation for support in the assertion of a great national right and interest. The response will soon be heard in a voice of thunder. The untaxing of the people's bread is a prospect full in view; and the people will spring toward it like lions on their prey."

The state of things in England seems to be, that the ministers, defeated in parliament, and despairing of holding their places without new and powerful support, have sought it by offering what the great mass of the common people so much want, the abolition of the corn monopoly, and the extension of free trade in general. After exciting such hopes, and such allies, the ministers can scarcely dare to draw back, or the landed proprietors and higher class to refuse consent to the proposed measures.

The revenue of the British government, as it appears from the report of the Chancellor of the Exchequer, recently made, shows a deficiency of £2,000,000. He indicated in his speech the intention of the ministry to lighten the protective duties on other commodities besides foreign grain.

"From the new budget [of France] it appears the deficiency unprovided for of the year 1840 amounts to 170,193,780f. That of 1841 to 242,603,288f. The budget of 1842, after the reductions made by the committee, amounting to 41,139,594f., would be calculated 1,275,453,340f., and the revenue being calculated at 1,160,000,000f., the deficiency would amount to 114,886,398f. To these deficiencies of the three years must be added a sum of 534,269,000f. demanded for extraordinary works of various kinds."

"Serious disturbances had broken out in various parts of Ireland, and the courts were busily engaged in the trials of the offenders."

The Tipperary papers contain accounts of outrages at Borrisokane, Kilruane, Bourn, Broka, Crimlin, Arderony, Liskahill and other districts of the county; such as threatening notices, intimidation, destroying property, assaults, and incendiarism; but in that quarter nothing more serious had occurred."

"General Don Antonio Quiroga, the leader of the Spanish insurrection in 1820, died suddenly at Santiago on the 26th of March."

"There is no later news from China. The arrangement of Capt. Elliot for the adjustment of the differences with the celestial empire were very unpopular

with the merchants interested in the East India and China trade, and they had remonstrated strongly against its ratification. A deputation had an interview with Lord Palmerston, on the 28th of April, upon the subject."

"The dispute of France with Morocco has been settled by mutual concessions. The Governor of Morocco has been dismissed, and the French Consul, M. de Laporte, has been recalled."

The war is still raging in Algeria, between the French and Arabs.

The New York Controller has advertised to sell at auction, (because of suspension or failures of the banks, the bonds and mortgages deposited with him as security for circulating notes by the following free banks:

Bank of America, at Buffalo.  
United States Bank, do.  
Merchants' Exchange Bank, at Buffalo.  
Mechanics' Bank, at do.  
Erie County Bank, at do.  
Phenix Bank, at do.  
Staten Island Bank, at Port Richmond.  
Cattaraugus County Bank, at Randolph.  
James Bank, at Jamesville.  
Binghamton Bank, at Binghamton.  
Bank of Lodi, at Lodi, Seneca county.  
Bank of Olean, at Olean.

The President of the Frankfort Bank, Me. has been arrested on a charge of *swindling*. There will be an ugly time for bank operations when modern *financiering* comes to be called by the old-fashioned name of "*swindling*."

Some few weeks ago about two bushels of abolition papers arrived at the Petersburg post-office, from a northern abolition society, directed to various individuals. They were all stopped and burnt. Some months before that there had been a previous similar supply, and in as large quantity, which had met with the like fate.

All the four negroes charged with the recent murder and arson, at St. Louis, have been arrested, and also a white man, who is suspected of being accessory.

*Another negro stolen.*—On or about the 14th instant, a negro man, the property of Mr. Stubblefield, of Gloucester county, Va., was stolen and carried off by a New York vessel. The owner immediately set out by land for New York, with another gentleman, to identify his property.

The New-York Times says. "The honorable Asa Child, of Norwich, lately President of the Norwich and Worcester Rail-road Company, has absconded with about 40,000 dollars, obtained from that institution by peculation and forgery. He was last seen in Philadelphia *en route* it was supposed for Texas." He was formerly district attorney of the United States and was one of the late candidates for presidential elector.

The Frederick County Bank, (Md.,) was entered "by burglars," with a false key, between last Saturday night and Monday morning, and robbed of \$185,976, of which \$10,000 was in specie. This being much more than its whole original capital, the bank has suspended operations. From the *clear work* made, as well as from their manifest preference for *hard money*, we suspect that the "burglars" were some of those who had charge of the bank, or knew well the situation and contents of its vault. A reward of \$10,000 (in *paper*, we suppose,) has been offered by the bank for the recovery of the money. *Query*. If the thief and the bank had kept their own counsel, and the robbery had remained a secret, why might not the bank have continued its operations just as well as before, and with as much benefit to the public, and much more to private interests? Under a *continual suspension* of specie payments, it matters not whether both the capital and the specie of a bank have been stolen or not.

The Danville (Va.) banking house was broken open a few nights ago, but the burglar was not able to get

into the vault, and so stole nothing. *Ergo*, he was not a bank officer.

Two distressing events have recently occurred in Canada. A storm destroyed a number of rafts of timber on the St. Lawrence, and about 50 persons of their crews were drowned. A part of the Cliff of Cape Diamond, in Quebec, had slipped down, and crushed seven or eight houses, and killed 26 persons.

The whole number of persons on board the President were 136.

Three eminent lawyers, Messrs. Dallas, Hirst, and Ingersoll, having been consulted by request of a public meeting in Philadelphia, have severally given their opinions that the late "relief law" of Pennsylvania, in authorizing the issue of \$3,000,000 in small bank notes, or *bills of credit*, is *unconstitutional*.

On May 7th, 220 Indians (all of whom except about 50 were women and children,) who had been captured, or had surrendered at various times, were shipped from Tampa to the Mississippi, for their new western home. Several chiefs and sundry other Indians had come in, and who had *promised* for all the others, on the condition of being paid the money *promised* by the government, to buy the chiefs' consent to emigrate. But as General Armistead could not show the cash, (the government being pretty much like the banks, in a *state of "suspension,"*) and the Seminoles putting no trust in the "*credit system*," they have returned to their fastnesses, and recommenced the war of private murder. Several inhabitants, and a mail carrier, have been since killed, and the bloody work will now proceed as before. The troops are already very sickly. General Armistead has probably left Florida, on leave of absence, and is expected to pass through this town in a week, on his way homeward.

The bank of Chillicothe, after having lent \$500,000 in *paper* to the state, and immediately *stopped specie payments*, as stated in our summary of the 8th inst. has since (as was then anticipated) shipped off a large amount of its specie for sale in New York. By this latter "fair business transaction," the bank will make a profit of 15 per cent. premium, that being the present difference of value between specie and its now discredited notes, in which the bank will pay its creditors.

Though specie is so deficient in this country, it is still sent abroad to countries that will not submit (as we do) to use the depreciated paper currency of swindling banks. \$80,000 in specie went by the last packet from New York to England. As long as our banks continue to cheat and rob the community, by refusing to pay their debts, and by issuing and circulating their irredeemable and depreciated notes, so long *specie* must, of necessity, be exported, as long as any can be obtained to export.

*By this morning's mails, (May 29.)*

The brig Minstrel, from Ireland for Quebec, having on board 141 emigrant passengers, struck on Red Island Reef, and was lost, on the 18th instant. There were 152 persons on board, of whom 148 perished. Only four (of the crew) escaped.

The following banks of Pennsylvania have notified the governor of their acceptance of the "relief law;" The Harrisburg Bank, Exchange Bank of Pittsburg, Bank of Chambersburg, Carlisle Bank, Bank of Lewistown, Towanda Bank, Lancaster Bank, Farmers' Bank of Lancaster, and the Farmers and Mechanics' Bank of Philadelphia. The Bank of Pittsburg declines accepting.

*Saturday, June 5, 1841.*

We have heard that some of the bank men have had under consideration the propriety of answering the arguments and facts, presented in the Farmers' Register, which serve to expose the evils and iniquities of the paper system. We heartily wish they would make the attempt—but have not the least expectation of it. The banking wire-pullers and



their tools are indeed very daring in many respects—but they will not dare to attempt to answer these charges, or to boldly face these attacks. They will work indirectly—and they may perhaps succeed, in silencing and putting down our publication—but it will certainly not be attempted by fair and open argument. As sore as they are under the exposure, they prefer to submit silently to all the charges and denunciations we have uttered, or can utter, rather than attract still more notice from the public by attempting any defence. They are perfectly sensible that their case is one, which, according to the homely old proverb, "the more it is stirred, the more it will stink."

Accounts from Valparaiso state that Commodore Alexander Claxton, commanding the United States squadron in the Pacific, died at Talcahuana, on March 7th.

The Branch Bank of the State of Georgia, at Macon, has been *depredated* upon, (we are at a loss for a proper and acceptable term,) to the amount of about \$60,000. The Savannah Republican says that "Nathaniel Barker, Cashier, Isaac G. Seymour, President, and Levi Eckley, H. K. Carter, and F. Sims, Directors, are the persons implicated. These frauds upon the institution have been committed under the obligations of an oath taken by the president and cashier of that office on the 8d of April, ult. after a certificate signed, saying the cash had on that day been counted and was all found correct."—This is bad enough, as an illustration of the corrupting influence of "bank facilities;" but what makes it worse, is that the Macon newspapers kept perfectly silent on the subject, and it was not until some time after the facts were matters of notoriety, and then upon a direct call for information, that a Savannah paper ventured to state the above facts!!!

The Augusta Chronicle of May 29th says—"Rumor was rife yesterday, founded upon the authority of private letters received in this city, that Macon has been the theatre of another bank robbery, which has just been detected in the Branch of the Central Rail-Road Bank, in Macon. The cashier is said to be the individual who has lined his pockets with the needful. We have not been able to learn the precise extent of the deficit in the cash account, but all seem to concur in the opinion, that it is quite large, probably twenty thousand dollars. A few more such disclosures, as these Macon exhibits, and Georgia will stand in the front rank of bank robberies. This is another of the curses of an inflated, irredeemable, non-specie-paying currency. The whole country becomes deranged with the mania for speculation and growing suddenly rich, and some of those who cannot obtain riches by fair means, steal whenever an opportunity presents."

The extra session of congress commenced on May 21st. There was a quorum in each house. Mr. White of Kentucky was chosen speaker of the House of Representatives. The message of President Tyler was received. Though it is not a very clear and open exposition of his present opinions and intended course, it seems to promise support to a law for a national bank, (i. e., "fiscal agent,") whilst the possibility of such a bill being unconstitutional in purport is also stated. The distribution of proceeds of sales of the public lands among the states is recommended—and raising the tariff of duties, not however to contravene the design of the compromise act, "except under urgent circumstances" is proposed, to meet the expected deficit of the treasury—which is stated to be more than 11 millions for this year.

A numerous public meeting recently held in Charleston, S. C., among other resolutions adopted the following:—

"Resolved, That Congress having no authority under the Constitution to incorporate a National Bank, if such an institution be incorporated, we hold that the charter may, at any time, be repealed, and the bank abolished."

The National Theatre, in New York, was burnt on May 29th. It was done by an incendiary. It was burnt two years ago, and rebuilt. During the fire the falling of the walls crushed an adjacent house of ill fame, and killed one of its inmates.

James B. Glentworth's trial for enormous frauds practised in the New York election, is over, and he has escaped by a *hung jury*.

The "Ironside Club" of Philadelphia have made a formal nomination of Commodore Stewart, as next President of the United States, which nomination the Commodore has formally accepted, and replied to in a published letter of considerable length. Twenty years ago, this whole matter would have been ridiculous in the extreme. But not so now.

The Baltimore American says—"The exportation of specie from this country to France goes on with unbroken steadiness, and is likely to continue while the present commercial relations between the two countries are permitted to exist." The Havre packet which sailed on Monday took out \$125,000 in specie. The *true* reason is that we prefer to use depreciated bank notes instead of specie in this country, and therefore our specie is *sold* and sent from this country to others that will not use paper money, or to such extent. This will continue as long as there is any specie to export, or until the swindling banks are compelled to pay their notes and obligations. To New York, where the banks were *forced* to pay specie, it flowed from all non-specie paying states, until last autumn there was 12 millions of dollars in the city banks, and very much more than was wanted. As there was no *effective demand* for it in Virginia and the other paper currency states, it was profitable to send the specie abroad; and seven millions of dollars of the specie was sent to Europe from the city of New York before the end of last winter.

The Girard Bank and the Commercial Bank of Philadelphia have refused to accept the benefit of the relief law of Pennsylvania.

*By this morning's mails, June 5th.*

The British steam-packet Acadia arrived at Boston on the 2d, in 13½ days from Liverpool, bringing European accounts 15 days later. The Liverpool dates are to May 18th. "The news is not of much political importance, nor is there any thing very favorable in the aspect of the commercial and monetary interests. Nothing heard from the President steamer, and no hope of its escape remaining."

"The Spanish regency has been settled by the election (by the Cortes) of the Duke of Victory (Espantero) to be sole regent of the kingdom."

"The growing crops both in France and England wear the most favorable appearances."

Great dissatisfaction prevailed in England in regard to the recent arrangement of terms with China—which arrangement, according to last advices from China, is likely to fall through. Sir Henry Pottinger is to succeed Capt. Elliott as Commissioner to China, and is clothed with full powers. The treaty signed by Capt. Elliott and the Chinese Commissioner had been rejected by the Emperor of China. This intelligence had advanced the prices of teas in England 20 per cent.

Another horrible disaster has occurred at sea in the foundering of the ship William Brown, from Liverpool for Philadelphia. 47 lives were lost, of which 17 were of persons *thrown* out of the boat, in which all had taken refuge, to save the lives of the others. The survivors were taken up soon after by a ship, and carried to Havre-de-Grace. Though imprisoned at first, for the drowning of their companions, they were soon discharged, upon the ground of the absolute necessity of the act.

The discussion on the free-trade system proposed by the ministry was in "full blast" in the House of Commons. The first measure of reduction was the sugar duties, nominally, but in fact the whole question is in-

volved in the debate. The ministry had announced their proposed rate of duties on grain, which is quite low—8s. per quarter (or 8 bushels) on foreign wheat, 4s. per quarter on barley and other grains, including Indian corn, and 3s. 6d. on oats. The greatest interest is excited, and the great body of the people anxious for the proposed reduction. We feel sanguine as to the favorable result, which will be of immense value to this country, as well as to Great Britain.

The New York Courier and Enquirer (administration paper) of the 3d, says of the President's message—"It is due to candor to say that this document has given far more satisfaction to the opponents than to the friends of the administration in this city." Among the objections then stated at length, are, the want of explicitness as to a national bank—the intimation of a possible veto on a law for that object—the repudiation of increase to the duties in contravention to the compromise act—the not recommending some early mode of increasing the revenue—and the not mentioning a bankrupt law.

Saturday, June 12, 1841.

John Q. Adams has at last triumphed. He moved to rescind the 21st rule of the House of Representatives, which forbade the reception of abolition petitions—and his motion prevailed by a vote of 112 to 104. The vote was not divided so much by party as by geographical lines.

All the four negroes charged with the St. Louis murder and arson, have been tried and condemned to death.

Theatricals are in a bad way in New York. In our last was stated the burning of the National Theatre. The Bowery had been previously closed, through inability of the manager to pay the city tax; and since, the Park Theatre has been sold for \$4,000 only.

Glentworth is to be tried again.

Some of the Philadelphia banks have been disappointed in a new effort to evade the law and cheat the public. This was by issuing "certificates" and "obligations" for \$5 to take the place of the ordinary bank notes for \$5, which the banks were required by law to pay for in specie. Both the Philadelphia Bank and the Farmers and Mechanics' Bank have been sued and cast upon their attempt to execute this new fraud of issuing and then refusing to pay these substituted "obligations."

Several of the country banks have accepted the provisions of the Revenue bill, and have already commenced the issue of small notes. Several of the city banks have rejected the provisions of this bill, and it is probable that the others will follow their example.

"From all the inquiries that we have made upon the subject, we think it very doubtful whether these bills will be able to maintain the credit of currency ere at all. They are palpably at a depreciation of twenty to twenty-five per cent. and it is quite certain that, unless the city banks with one accord come to their relief and agree to receive them on deposit, and in all their transactions credit them as currency, they must fall into discredit. Now will the banks here, with any considerable unanimity, agree to thus credit them? We have some good reason for believing that they will not. Some have already declared that they will not, and, if they adhere to this determination, as we believe they will, they must adopt the only alternative left them—*resume specie payments in full for all their liabilities*. The insolvent and unsound institutions that hoped to live through the next five years by virtue of the Relief Law, at the expense of the sound and solvent banks, will find themselves greatly mistaken."—*Ph. Led.*

Benj. Higgins, master of the sloop Wellington, of Boston, is under trial in that city for kidnapping a negro man in Boston, and sending him to Newbern N. C. The facts are that the slave concealed himself on board the vessel, when it was in the port

of Newbern, and was not discovered until far on the voyage. The captain kept the slave confined, to send him back to Newbern, and did so on the return of his vessel, it being a regular trader between Boston and Newbern. Thus, by his honest endeavor to escape the charge of kidnapping a slave in Newbern, he is charged by his countrymen with kidnapping a freeman (the same negro,) in Boston.

"Dr. Braddee, tried at Pittsburgh for robbing the mail, has been convicted, and is to be sentenced to the penitentiary. He is represented as a wealthy individual, who enjoyed a large and profitable business. Since the conviction of B., two of his gang, Strayer and Carman, have pleaded guilty."—*Ph. Led.*

The people of Cincinnati, have had the good sense to refuse to see Fanny Ellsler dance. It is the first town which she could not lay under a heavy contribution.

"The president, directors, and company of the Bank of the United States yesterday entered a suit in the District Court against the late President, Nicholas Biddle." (*Ph. Led.*)—We trust that this suit will serve to expose much more of the gigantic system of swindling, and pillaging the people, and of bribing their representatives and political leaders, than has yet appeared.

Lieut. Hunter, of the navy, has invented, and had constructed at Gosport, Virginia, a steam vessel propelled by submerged paddles. It was tried on the Dismal Swamp canal, and found very applicable to canal navigation. It has gone to Washington for full examination and trial, and made the passage up the Chesapeake, at the rate of 10 miles the hour. Opinions so far are much in favor of the value of the invention.

A mode of directing the course of balloons, it is said, has been discovered, and successfully tried in France.

An insurrection has taken place in the neighborhood of Moscow.

Insurrections have broken out in Candia, Bulgaria, Servia, and other parts of the Turkish empire, which will be difficult to quell.

The report of the secretary of the treasury recommends, distinctly and clearly, the chartering of a national bank. Mr. Clay had previously moved in the senate the repeal of the sub-treasury law, and the establishment of a national bank.

The Union Bank of Mississippi, (having cheated the public as much as possible, we presume,) is now to be wound up "as speedily as is consistent with the present condition of the country." But it seems from the following paragraph (of the Vicksburg Sentinel of May 27,) that the authorities mean to make another effort before they yield.

"We understand that the Cashier of the Union Bank, at Jackson, wants to make a loan of 25,000 dollars, to help to pay the expenses of the bank. But the most amusing part of the business is, that he wants to get this loan on a pledge of Union shipplasters! We expect to see Union sell for 16 cents on the dollar; and, if they have to sell notes to pay the officers, they will soon be as cheap as Brandon."

"*Exchanges and a Fiscal Agent*—We asked one of the largest houses dealing in exchanges in Wall street, at what rate they would undertake to collect and disburse the public revenue, receiving payment in specie or its equivalent wherever money is to be received, and paying it in the same currency wherever it is to be paid. The answer was, 'a quarter of one per cent.'"—*Journal of Commerce.*

The Bank of Michigan, although its suspension was permitted by law, and for enough time to come, has nevertheless been compelled to stop operations. Bad times for the swindling banking system, when banks cannot go on even with the aid of legalized suspension of specie payments.

The Bank Commissioners of Ohio have resigned,

because their legal authority is disregarded by the banks, and the judges have refused to grant an injunction in the worst case, that of the wholesale swindling Bank of Gallipolis. "Many of the banks are issuing one-dollar notes in open violation of law, and several corporations and towns have thrown out their shipplasters."

Of the fifty banking institutions of Pennsylvania, twenty-six have accepted the benefit of the late relief law, and six have rejected it. The decisions of the others have not yet been heard.

*By this morning's mail.*

Capt. W. G. B. Taylor, boarding officer, Balize, has captured and brought in a schooner, whose piratical character and designs were evident from her armament, flag and papers. The crew were brought in ironed. This statement is abridged from Capt. Taylor's full report to the collector of New Orleans.

No arrival from Europe at New York, to the 10th. Three other banks (making 9 now heard from) have refused to accept the benefit of the Pennsylvania "relief law." These are the banks of Doylestown, Easton, and Kensington. The expectation of early resumption of payment by the solvent banks of Philadelphia is increased.

The steamer *Maid of Orleans*, with a cargo of lead, sunk at Hat Island in the Mississippi. The loss was expected to be total.—*Louisville Adv. of 5th*

The Steamer Duncan McRae, on her trip up the Savannah River, was blown up four miles below Johnson's Landing, and sunk in 10 minutes. Two firemen badly injured. The cargo nearly a total loss.—*Ch. Courier*.

*Saturday, June 19, 1841.*

The Great Western steam-ship arrived at New York on the 10th, in 14 days from Bristol, bringing London dates to 26th ult., and seven days later than previous accounts. No news of interest, except the defeat of the ministry by a majority of 36 votes in the House of Commons, on the sugar duty bill—the first of the series of the proposed free trade measures. The ministers expect better success in regard to the corn laws, which they then brought up for repeal. If defeated there also, they have announced the intention of dissolving parliament, and appealing to the people by a new election. In the mean time, Sir Robert Peel has given notice of his intention to move that the ministers do not possess the confidence of parliament, and "that their continuance in office, under such circumstances, is at variance with the constitution."

"An utter stagnation is now rapidly creeping over every branch of industry, whether manufacturing or commercial, and whether in town or country. All kinds of testimony agree that in this, ordinarily the liveliest period of the year, there never was experienced in the memory of man so general and complete a paralyzation of trade."—*Lond. Paper, May 25*.

From the great dissatisfaction existing in regard to the late negotiations with the Chinese, we expect that, upon the arrival of the new British commander, there will be a course of prompt and vigorous procedure commenced, which must cause a renewal of the war, and lead to results of great importance to the contending nations, and to the commercial world.

Each of the two editors of the New York American and the Courier and Enquirer has published his claim that General Harrison had promised to make him postmaster of New York. It seems that these conflicting assertions and claims are to be settled by President Tyler refusing to give this post-office to either of the competitors. This decision will be applauded by all honest and disinterested men. The newspaper press (of both high and low degree) is sufficiently exposed to corrupting influences, without adding thereto the rewards of rich government offices, for partizan electioneering services.

The notorious Seminole marauder Coachoochee, or Wild Cat, with 15 other warriors, 3 negroes, and a boy, have been captured by Major Childs, and shipped off for the west.

The Grand Jury of Boston refused to indict B. Higgins, the mate of the Wellington, charged with kidnapping (as stated in our last.) Their decision has caused great excitement amongst the abolitionists in Boston.

The Secretary of the Treasury has submitted to Congress his plan of a National Bank. Our limits do not permit presenting its features. There will be yet much disputation as to the details of this measure, and possibly a failure of the bill on that ground.

The repeal of the anti-abolition (21st) rule of the House of Representatives is under reconsideration, by a vote of 106 to 104, and the house is disposed to be very disorderly thereon. This session, so far, promises to be any thing but quiet, orderly, or business-like. Fifteen days have passed, and the rules of the lower-house have not been yet adopted.

A British cruiser, the Termagant, attacked a Spanish slaver on the coast of Africa, and was beaten off with some loss.

The master of a British merchantman has been fined \$273, by the court of Liberia, for trading with the natives within the limits of the colony. He claimed to be authorized by his government, to which he will appeal.

A letter from New Orleans, to the National Intelligencer, dated 6th inst. says that the ship Charles, which sailed a few days before for Havre, France, was fallen in with about 40 miles from the mouth of the Mississippi, with sails set, but no one on board. There were fresh traces of blood, and other reasons to believe that either pirates had captured the ship, or more probably that the crew had murdered the passengers, 13 in number of whom 6 were ladies, and robbed and abandoned the ship. The passengers had, as was supposed, \$100,000 in specie. Several expeditions had started from New Orleans, to cruise in pursuit of the murderers; and great excitement had been produced by this mysterious and horrible event. The passengers were mostly inhabitants of New Orleans. Up to the 9th inst. nothing had been ascertained, though more than 20 persons of suspicious character had been arrested and were in confinement. The crew of the piratical vessel recently captured off the Balize, were supposed to be concerned in this act.

From the National Intelligencer of the 17th it appears that, after 17 days of squabbling and disorder, the House of Representatives has been finally organized. The 21st (anti-abolition) rule, and its repeal, are to remain in suspense until the regular session, then to be discussed and settled, *if possible*. All the other former rules of the house were adopted—and the members may now proceed to wrangle about something else.

"A few weeks ago, the court was to sit in Helena, (La.) to grant judgment to the banks, which had sued extensively; but the people met, closed the door of the court-house, and refused to admit either judge, jury, or sheriff. The judge was about to hold the court in another building, but soon learned that the sheriff had resigned, and no court could be held."—(*La. Adv.*) This lawless course is unjustifiable and abominable; but what else can be expected, when the law, as in Louisiana and Virginia, relieves the banks from all obligations to pay their debts, than that those who owe the banks should consider it justifiable to "suspend payment" of their debts likewise? Outrageous and unjustifiable as is such violation of law, and of honesty, by their debtors, the banks have no right to complain, that their own dishonest and illegal course is thus imitated, and opposed to their own refusal to pay what they owe.

Willis Gaylord Clarke, the printer, poet, and late edi-

tor of the Philadelphia Gazette, died on the 12th inst. aged 32.

The notorious Dr. Eldridge, who was charged with haying swindled different banks so largely, and who has been so long under trial in Philadelphia, was discharged on his own recognizance to appear, in the sum of \$1,000. No jury could agree as to his guilt.

An absconding female slave, belonging to Dr. Shields of Maryland, having been legally arrested in Lancaster, Pa., and when in charge of Mr. Grabill, brother-in-law of the owner, and two of the police, was forcibly rescued by a party of negroes. All the three men above named were much hurt in the fight with the assailants, and one of the attacking party was shot by one of the police, and is reported since to be dead.

The scheme for a national bank, submitted by the Secretary of the Treasury, is strongly denounced by some of the leading papers of the administration party. The New York Courier and Enquirer says it has caused universal disappointment.

Prices of exchange, or discount, at New York on the 15th—

On Philadelphia, 3½ a 3½	On Augusta, 6* a 15†
Baltimore, 3½ a 3½	Mobile, 10 a —
Richmond, 4½ a 4½	New Orleans, 7½ a —
Charleston, 1½ a 1½	N. Carolina, — a 5
Savannah, 8½ a —	Cincinnati, 9 a 9½
	Louisville, 8½ a —

\*Augusta funds.

† R. R. funds.

"The suit recently instituted against Nicholas Bidle by the United States Bank is to recover nearly seven hundred thousand dollars, paid out during his administration, for which no vouchers can be found; of which sum more than four hundred thousand dollars, it is asserted, were paid to him, for purposes unknown, upon the checks of the Cashier.—*Phi. Led.*

The Richmond banks have given notice that after July 1, they will not receive any notes of the Wheeling banks. This is because the Wheeling notes are something worse in market, or in depreciation, than their own.

*Saturday, June 26, 1841.*

The supposed piracy on the ship Charles, stated last week, turns out to have been a voluntary abandonment of the ship by the crew and passengers, on account of its leaking. The passengers had proceeded to France in the ship Louis XIV, and the captain and crew came in another vessel to Charleston, S. C., where the case was judicially examined, and ample proof of the absence of all criminality furnished. Still it is strange that the leak which caused such a panic should have become less; and, also, that, when leaving the ship, no note was left by the master to explain the cause, to any persons who might visit the wreck.

The steamer Colombia, Captain Judkins, arrived at Boston about 9 o'clock on Wednesday afternoon, (June 16th,) in the unprecedentedly short passage of twelve days and five hours from Liverpool. She brings papers from that city to the 4th inst., and London to the evening of the 3d, bringing news 8 days later.

The news from Canton (to April 1st) is important, and authentic. In consequence of the refusal of the emperor to ratify the previous convention, hostilities had been renewed by the British, the Bogue forts attached and carried, and the factories taken possession of, which position gives the entire command of the great city of Canton, and subjects it to be burnt at any hour. The British lost not a man in the affair, and had killed between 200 and 300 of the Chinese, and taken 1800 prisoners. The British commander has proclaimed a suspension of hostilities with the city, until the intended procedure of the Chinese authorities is known, and has opened the trade. This affair is ominous of a complete prostration of the Chinese to British power. The Canton Press says, that "eve-

ry thing wears the appearance of a protracted war." This news from Canton advanced teas 2d. a 3d. per lb. The general appearance of the crops in Europe indicated favorable harvests.

Hostilities had been recommenced by the Russians, on an extensive scale of preparation, with the Circassians. The first affair was sanguinary, and the Russian Major General, Backurim, was killed.

The difference which lately arose between the Ottoman and Persian governments has been amicably settled.

The insurgents of Candia had received reinforcements from Greece, and were gaining ground. The insurrection in Bulgaria had been quelled.

Sir Robert Peel's resolution (of want of confidence in the ministry,) was still under debate in the House of Commons.

The state of trade in Great Britain was bad beyond precedent. All branches of industry were languishing. Some of the cotton mills in Scotland were beginning to work but part of the time. The price of cotton had fallen, and the market was very dull. The prospect of the repeal of the corn-laws had put the nation in a ferment. The dissolution of parliament is expected soon.

A new system has commenced of importing free natives of Africa to the British West Indies as hired laborers. Two vessels bringing 267 of these emigrants have arrived at Jamaica. This fact is one of the most striking proofs that the emancipated slaves are not to be relied on as hired laborers, or these new and barbarous substitutes would not be required.

An attempt was lately made, at Apalachicola, Fl., by persons on board a New York vessel, to carry off four or five slaves, whom they had persuaded to abscond. The scheme was discovered and the slaves stopped, but the vessel and the practical abolitionists escaped.—*Tallahassee Star.*

Only thirty-five of the fifty banks of Pennsylvania have accepted the benefit of the relief law; and their proportions of the loan to the state, under that law, (to be issued in small notes,) will fall short of the whole amount expected, by \$1,409,072.

Samuel Wright, a merchant of New Orleans, had written letters to the Vicksburg Sentinel, in which he boldly and truly exposed the frauds of sundry of the speculators, banking financiers, and great cotton dealers, practised on the planters and the community. A conspiracy was formed among the exposed swindlers to put down Mr. Wright. The first attempt was to expel him from the Commercial Reading Room, and thus to injure his reputation. This failed; for even among this mercantile body, he was sustained by a majority. He was then challenged, by a merchant named Oakley, and shot dead in the duel. Mr. Wright has been murdered for telling the truth, and exposing fraud and villany: but his assassination will serve the cause that he died for, even better than his published arguments and facts. The editor of the Vicksburg Sentinel says of his bold associate in the war against banking and commercial swindlers, that Mr. Wright "fell literally among a band of felons, a martyr to justice, truth and honor." It is easier for such felons to proscribe and even murder their few opponents than to refute their arguments, or deny their charges.

The House of Representatives have passed an act appropriating \$25,000 to the widow of Gen. Harrison. The vote was 122 to 66.

RAIL ROADS.—There are now wanting only two or three links to complete the long line of rail road from Maine to North Carolina—24 miles between Hartford and Springfield, and 50 miles from New Haven to the state line of New York, making one entire line from Buffalo on the west, and Portland on the east, to the city of Washington—in length over 1000 miles! When this is completed, we will have an iron line from the east to the west, north to south and south-west, of continued lines, with the exception of about

50 miles from Washington to Fredericksburg, Va., of nearly 2000 miles.—*South. Recorder.*

The death of M. Niemcewicz, the distinguished Pole, who was for many years a resident at Elizabethtown, N. J., and whose name is alike dear to freedom and literature in both hemispheres, is announced in the *Journal des Debats* of Paris. He was 84 years old at the time of his death.

There arrived at the port of New York, on the 22d and 23d inst., 1389 steerage passengers.

"We learn, (says the N. Y. Herald of the 23d inst.) by a private letter received yesterday from Lima, that about the first of April an important battle was fought between the government forces and the revolutionary party. The action took place near Arequipa, and at first the latter party, under the supreme command of Vivanco, was victorious, but the government troops under Gamarra finally triumphed."

Campeachy papers to 17th ult. have been received at N. Orleans. The cultivation of tobacco, which formerly was subject to taxation, is hereafter to be free. The port of Bacalar has been opened to foreign commerce. The State of Yucatan has definitively declared its absolute separation from the Republic of Mexico. On the 16th of May, the new constitution, decreed by the legislature, was published at Merida, the capital of the state. The Mexican flag was taken down by the populace, torn into pieces, and its place supplied by other colors. The liberty of worship is declared by the constitution. To strangers every possible guaranty is promised. The new government is about to send messengers to Washington and Europe, for the purpose of being recognized as an independent state. Don Francisco Riebaud has been called to Yucatan, and placed in the charge and direction of the navy. Many other distinguished men have been recalled.

"RELIEF LAWS.—It appears that a system of banking has been tried in Mississippi similar to that of the relief law of the last session of our Pennsylvania legislature—that is, a founding issues on state stocks, and expecting them to remain in good credit without the aid of specie payments. This system, being in opposition to the fixed laws of nature, failed of course.

"The Union Bank of Mississippi was established upon an issue of state stock, of which it received five millions, and issued its own notes upon the faith of the capital so obtained. The bank was to have paid the interest on this stock, but it has neglected to do so, and the people are now called upon to pay it.

"In the mean time the officers of the bank are too wise to take their own pay in the stuff which they have put off to others, and the cashier is now endeavoring to obtain a loan of \$25,000 in cash upon the pledge of the notes of the bank, the money being wanted to pay the bank expenses.

"It is to be hoped that a few more such experiments will convince our legislators that the best relief bill is one that requires the banks to comply strictly with their engagements, and the best monetary "regulator" is a bankrupt law, which shall wind up the affairs of every bank which may suspend payment for thirty days in succession."—*Pennsylvanian.*

THE PRESIDENT.—The insurance company of New York, that underwrote the cargo of the President, have paid the full amount of the loss—conclusive evidence of what they think of her fate.

The Jackson Mississippian, of the 4th inst., says that Governor McNutt has received official information that the state has been protested for interest due on a portion of the Union Bank bonds.

The Doric, at New Orleans, from Tampico, brought upwards of \$36,000 in specie, and the Creole, at the same port from Matamoras, brought upwards of \$50,000.

The committee in the United States Senate having in charge the subject matter of the Finances and a National Bank, it is said will extend the limit of the rate of dividends to 7 per cent.

Nothing had been heard at the latest dates of the robbers of the Frederick County Bank.

An injunction was placed on the Bank of Michigan on the 11th inst., and a receiver was to be appointed.

The Great Western took out only about \$5000 in specie, and not a very large amount of bills.

The recent census shows that there is one insane person for every 990 inhabitants.

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# THE FARMERS' REGISTER.

VOL. IX.

JULY 31, 1841.

No. 7.

EDMUND RUFFIN, EDITOR AND PROPRIETOR.

## LIMING LAND WITHOUT ANY BENEFICIAL RESULT.

To the Editor of the Farmers' Register.

Nottoway, June 16th, 1841.

Though not a subscriber to your paper, yet I am not indifferent to its success, nor deprived of the pleasure and profit too, I trust, to be derived from its perusal. On the contrary, you have my most hearty congratulations for the many compliments you have won from your correspondents, for the ability and usefulness with which you have conducted it; and I am now restrained more by prudence than justice, from expressing, *plenis verbis*, the favorable regard in which your labors are held by an humble member of the agricultural community. This will be better done, no doubt, to your own taste, and with less fulsomeness to your readers, by adding, if I can, to the number of facts, which you may be able to present before them, worthy of their attention.

In the winter of 1837-'38, I cut down a piece of pine land, of second growth, in good heart, being interspersed with dog-wood and grape vine. The size of it was 3 or 4 acres of ground. It was permitted to lie for 1 year with the fallen trees and rubbish upon it. In the spring of 1839, it was hilled and planted in tobacco, followed by the same crop in 1840, and by wheat and herds-grass the last winter. Previously to hilling for the first crop of tobacco, a portion of lime, made by burning oyster shells, was sprinkled over half an acre of this land, selected from about the middle of it, the pine beard being permitted to remain upon it, but removing by a slight raking the coarsest of the trash. It was put on at the rate of about 70 bushels of lime to the acre. I have carefully watched the effects of it upon the 3 successive crops, by comparing the products, according to the eye, of the limed and adjoining portions of land, and have not yet been able to detect the least decided advantage of the former over the latter, more than what might be attributed in certain parts to superior original fertility of soil. The crop of wheat now upon it shows such a uniformity of aspect, in growth and maturity, throughout the entire piece, that it seems to me the most minute observer would not dream that such a vaunted fertilizer as lime is had been applied to any part of it, if we may except many irregular spots over the entire surface, including limed and unlimed portions, in which the more vigorous growth and more rapid maturity of the wheat manifest the undoubted virtues of *ashes*, deposited by the burning of heaps of logs and brush.

Other experiments with lime have been made and are making in my neighborhood, but with few well-established practical conclusions, at least, in its favor. A gentleman sowed lime upon his tobacco lot last spring after manuring it, and did not reap such a crop of tobacco as his manure alone promised. Not meaning, however, to aver that the lime was an injury, but only that it did not seem, to an appreciable extent, to counteract injurious causes. This gentleman is doubtless

flattered with the hope, if not belief, that its beneficial effects will be considerably realized in the present crop of wheat. Whether it be confirmed or not, it will be difficult accurately to ascertain, but the conclusion to be drawn from the experiment, related above, upon my own land, would seem to be unfavorable to such a supposition.

Guided by principles which I suppose you to have advanced in relation to the action of calcareous manures, I shall yearly watch the effects of the lime upon the  $\frac{1}{2}$  acre of ground above described, with the expectation, if they are correct, that with moderate cultivation and grazing, and a moderate supply of vegetable matter of its own growth, from herds-grass, it will either improve more rapidly than the adjoining land, or deteriorate more slowly. If the above should merit any notice from you or your readers, it would be pleasing to me to see something confirmatory of, or contradictory to what is here advanced; for, in agricultural practice and opinion, the paradox is just, that our enemies are often our best friends.

G. F.

## FRENCH AND AMERICAN RURAL COMFORTS.

From the Farmers' Cabinet.

Mr. Editor:—To be able to "define our proper position in the world," and to form a true estimate of our character and standing in the scale of human beings, it will be necessary for us to compare ourselves by the standard of comfort and happiness enjoyed in other civilized countries, and especially with the inhabitants of those states which have been for ages under other forms of government, become venerable from their antiquity. I am led at present to this subject, by a perusal of the article in the Cabinet for March, on the state of society in that part of the continent which is denominated "the Granary of Europe," where cheap land and low wages seem almost synonymous with misery and starvation.

During a late tour in the low countries, in France, I was struck *dumb* while witnessing the state of society in that part of "dear, delightful France," having never before had the most distant idea of the possibility that such a low, debased, and degraded state of things could exist in any civilized country under heaven; and I have never, since my return, been able to find words to express my feelings, or to describe what I there saw; but as I have since found the same scenes portrayed to the life in Blackwood's Magazine, all I have to do is to bear testimony to the truth of the picture, which is by no means too highly colored, and which I do most conscientiously; congratulating my fellow countrymen on the comfort and happiness which they enjoy in this blessed land of liberty and high wages. The traveller thus commences:—

"Nantes, in Bretagne. Passed through a productive country, where the cows seemed the legitimate proprietors—the peasantry, interlopers. The fields were luxuriant, but all that betokened

the presence of man was deplorable. 'God made the country and man made the town,' is the poet's manner of accounting for narrow streets, but the general order of French towns do not come within the catalogue of *human buildings*—nothing on earth comes nearer to the troglodyte style. Nineteenths of them seem to have been the simple work of nature; piles of mire, shaped into habitations by the hand of time and tempest, and as guiltless of glass windows, whitewash, and comfort of any conceivable kind, as a cavern in the back of an American wilderness! But the Frenchman is a genuine 'Gallo' in private life, and careth for none of these things; yet he is within 50 miles of a people whose study is every thing of domestic convenience. To what can the extraordinary difference be attributed, which makes the man of England and the man of France as essentially antipodean as if the diameter of the earth divided them? It cannot be climate, for in three-fourths of France they have shower for shower with England; or if there be a distinction, the winter is keener and the summer more torrid, thus both requiring more diligence in repelling the effects of season. It cannot be poverty, for the French peasant has generally become a proprietor: it cannot be government, for if governments act at all in the matter, it is to set the example of building: yet the French peasant goes on from year to year and from age to age, sitting in a cottage as naked of comfort as if he sat on a hill in Siberia, and a Tartar hut would be well equipped to the best of these hovels: they have not even the merit of being whitewashed sepulchres, for a brush has never touched them since the moment they arose from their original mire;—the truth is, that "home," as it has been a thousand times observed, is not *French*; there is but little gathering around the family hearth, and the cottage is not the place of their mirth; they return to it to sleep, and go to it as men to the churchyard, because they cannot help it. Their festivities are for the guinguette, their superfluous coin is expended on the gilded head-gear of the rustic belles, or the flame-colored waistcoats and flowered stockings of the rustic beaux; while the summer lasts they live in the open air, working, dancing, eating, and flirting through the day; and when the winter comes, they cluster together in their huts like bees, with no more concern for their furnishing than a generation of rabbits in their warren; there they hibernate, dismal, dark, and frozen, until the first gleam of sunshine rouses them, and lets the whole tribe loose like the swallows—and then all is fluttering, frisking and hunting flies—or matters fall as light as flies—again." J. C.

#### EXTIRPATION OF SASSAFRAS SPROUTS.

From the Kentucky Farmer.

*Pleasant Run, Logan Co., May 22, 1841.*

You ask, in the 29th number of the present volume, for the practice of some one in subduing sassafras sprouts; I have thought proper to give you and your correspondent, Mr. Champion, of Caldwell, my observations and practice. When I commenced farming in this county I was annoyed with the sassafras, and remarked to a neighbor

of mine that the sassafras sprout was a very great objection to the Green River country. I saw fields thickly set with it and the fences completely staked and ridged with them growing, and knew not how to get rid of this evil; to cut one down, was to insure twenty more. He informed me that a few years previous he would have given one hundred dollars to have them cleared from one field, but had succeeded entirely in freeing them from his farm. His practice had been to sow his fields in clover, and pasture his sheep on them, commencing early in May. This stock will keep the leaves well trimmed off, which will cause them to die, root and branch. I had a field at that time better set than most of the wheat this spring. It was set in clover; I put all my stock on it, and still lacked some, and borrowed from my neighbors, which entirely subdued it. I advise all of my brother farmers whose fields are infested with this troublesome shrub to sow them in clover, and instead of having their stock running in the wood, until July and August, with their winter coats on, to put them on the clover in May; and if they have not a sufficient number themselves to keep the sprouts trimmed, to borrow of their neighbors, and not think of a charge for pasturage, for the laborer is worthy of his hire. If you think the above or part of it worthy the consideration of your correspondent, you are at liberty to give it him in any form you please.

WINN GUNN.

#### STATE AID TO AGRICULTURE IN NEW-YORK.

From the Cultivator.

We are gratified to announce that the bill introduced for the aid and improvement of agriculture, into the legislature of this state, has become a law, and that, if not all that some of our agricultural friends expected, still its influence must be powerful for good. It appropriates eight thousand dollars annually, of which \$700 goes to the N. Y. State Ag. Society, and the remainder is divided among the several counties in proportion to their population, on conditions and restrictions which must ensure its faithful application to the use intended by the state when granting the aid. It will be seen that no county can receive its share of the money unless a county society is organized, and a sum equal to that appropriated is raised by the association to be added to and expended with that for premiums. This is a very important provision; and one on which we think the great efficiency and utility of the aid afforded will depend. Every county in the state, therefore, which has not already an efficient society organized, should make no delay in effecting this object. Men of spirit, talent, enterprise, thorough farmers, or who feel a deep interest in the advancement of agriculture, must take the lead in this business, and the many will soon be interested in the result, and cheerfully follow the movement that we think will eventuate in so much good. Let every thing like sectional or political feeling be religiously eschewed in the management of these societies. They are intended for the people, to benefit the many, and so the funds appropriated must be sacredly regarded.

We think it may reasonably be anticipated that



the reports which are to be made to the secretary of state from the state society, and the county societies, will form an annual volume of the most instructive and useful kind, and which will form a record or history of agriculture in this state invaluable to the farmer. The agricultural law of 1817, has done much for the fame of De Witt Clinton, and the good effects resulting from it have not yet ceased to be felt. The farmers of the state have demanded, and the legislature have again granted aid to the agriculture of the state. Let such a use be made of this money, and such a spirit awakened in the community, that the agricultural prosperity of the state shall be commensurate with its unequalled position, and its immense resources.

*An act for the encouragement of Agriculture.*

[Passed May 5, 1841.]

The people of the state of New-York, represented in senate and assembly, do enact as follows:

§ 1. The sum of eight thousand dollars per annum shall be and hereby is appropriated for the term of five years, for the promotion of agriculture and household manufactures in this state, in the manner following, to wit: to the county of

Albany,	\$205	Oneida,	\$255
Alleghany,	123	Onondaga,	204
Broome,	67	Ontario,	130
Cattaraugus,	86	Orange,	152
Cayuga,	151	Orleans,	75
Chautauque,	143	Oswego,	131
Chemung,	62	Otsego,	148
Chenango,	122	Putnam,	38
Clinton,	84	Queen's,	91
Columbia,	133	Rensselaer,	180
Cortland,	75	Richmond,	34
Delaware,	106	Rockland,	36
Dutchess,	157	Saratoga,	121
Erie,	186	Schenectady,	51
Essex,	71	Schoharie,	97
Franklin,	50	Seneca,	74
Fulton & Hamilton,	60	Steuben,	138
Genesee,	179	St. Lawrence,	170
Greene,	91	Suffolk,	97
Herkimer,	112	Sullivan,	47
Jefferson,	183	Tioga,	61
King's,	143	Tompkins,	114
Lewis,	53	Ulster,	137
Livingston,	117	Warren,	40
Madison,	120	Washington,	123
Monroe,	194	Wayne,	126
Montgomery,	107	Westchester,	146
N. Y. to Am. Inst.	950	Yates,	61
Niagara,	93	N. Y. S. Ag. Soc.	700

§ 2. When the New-York State Agricultural Society and any county agricultural society now formed, or which may hereafter be formed in this state, or the American Institute in the city of New-York, shall raise by voluntary subscription any sum of money, the president and treasurer shall make and subscribe an affidavit of the facts of the formation of such society, and of their having raised a certain sum, specifying the amount thereof, which affidavit shall be filed with the comptroller of this state, who shall draw his warrant on the treasurer for a sum equal to the amount of such voluntary subscription, not however exceeding the amount to which such county or state

society would be entitled, according to the apportionment aforesaid.

§ 3. The New-York State Agricultural Society and the several county agricultural societies now formed or which shall be formed in this state, during the continuance of this act, shall annually elect such and so many officers as they shall deem proper; and it shall be the duty of such officers annually to regulate and award premiums on such articles, productions and improvements, as they may deem best calculated to promote the agricultural and household manufacturing interests of this state, having especial reference to the net profits which accrue, or are likely to accrue, from the mode of raising the crop or stock, or the fabrication of the article thus offered, with the intention that the reward shall be given for the most economical or profitable mode of competition; provided always, that before any premium shall be delivered, the person claiming the same, or to whom the same may be awarded, shall deliver in writing to the president of the society as accurate a description of the process in preparing the soil, including the quantity and quality of the manure applied, and in raising the crop, or feeding the animal, as may be; and also of the expense and product of the crop, or of increase in value of the animal, with the view of showing accurately the profit of cultivating the crop, or feeding or fattening the animal.

§ 4. The president of the State Agricultural Society, and the several presidents of the said county societies, who shall receive or expend any of the moneys hereby appropriated, shall annually, in the month of December, transmit to the comptroller a detailed account of the expenditure of all the moneys which shall come into their hands under this act, and stating to whom and for what purpose paid, with the vouchers thereof; and the said presidents of the several county agricultural societies shall annually transmit in the month of December, to the Executive Committee of the New York State Agricultural Society, all such reports or returns as they are required to demand and receive from applicants for premiums, together with an abstract of their proceedings during the year.

§ 5. The Executive Committee of the New York State Agricultural Society shall examine all reports and returns made by the presidents of the county agricultural societies, and condense, arrange and report the same, together with a statement of their own proceedings, to the secretary of state, in the month of January in each year.

§ 6. The presidents of the several county societies, or delegates to be chosen by them annually for the purpose, shall be ex-officio members of the New York State Agricultural Society.

§ 7. It shall be the duty of the county clerks in the several counties of this state to cause notice to be given in one or more newspapers in each county, of the time and place of a meeting to be held in such county for the purpose of organizing such county agricultural society; and notice thereof shall be given at least four weeks previous to such meeting.

§ 8. This act shall take effect immediately.

State of New York, } This act having been approved and signed by the  
Secretary's Office, } Governor, on the 5th day of May, 1841, I do hereby certify that the same became a law on that day.

JOHN C. SPENCER, Sec'y. of State.



**JAMES RIVER WATER-BORNE MARL, AND ITS EXPENSE. LIME AND CEMENT FROM STONE MARL.**

At various places in our publications, and still more in private conversations, we have recommended and urged the use of water-borne marl to all those farmers on navigable waters who had not marl easily accessible on their own lands. Our arguments to this end, and estimates of advantages, have as yet had but very limited operation, not because they were not convincing to many, and who would gladly have incurred the proper expense, but because, to effect the object, required the co-operation of three different classes of operators. These were, 1st, the proprietor and worker of the marl beds, to sell, dig, and deliver the marl to lighters, or other vessels; 2d, watermen and owners of vessels to transport the marl; and 3d, purchasers upon fixed and large contracts, so as to furnish that regular and full employment which only could make all parts of the business (as of any other business,) both cheap in operation and profitable in results. Many persons were, and still are, anxious to buy marl—but few proprietors of the beds cared to work them on a proper mode for cheap delivery—and still worse was the chance to obtain the water transportation to be properly and certainly performed, and at other than exorbitant rates. But notwithstanding all the difficulties, we succeeded as early as 1833 in inducing Col. C. H. Minge, then residing in Charles City county, to commence marling his farm in that county from the bed which underlies Coggins Point, of which we gave to him (and also to others afterwards) the gratuitous use. Col. Minge proceeded on the proper mode for cheapness, by purchasing a vessel, and having the transportation carried on by his own hired hands. But though thus avoiding the exorbitant charges and unfaithful operations of lighter-men, he had to bear all the disadvantages and losses of carrying on all the separate branches of the business, generally out of reach of his supervision, and by the aid of ignorant and inexperienced hands—and, moreover, under other peculiar disadvantages, unnecessary to repeat here, but which may be seen, as slightly and generally referred to, in the report published at page 97 of 'Essay on Calcareous Manures.' Still, under all such disadvantages, (which we suppose must have served to increase the cost fully one-third,) Col. Minge continued his operations through two years, and, according to careful and particular estimates of all the items, he found the total expense of the uncovering and digging the marl, putting it on board, transporting it 15 miles on and across the broad part of James River, and landing it above high-water mark, to

be, for 15,000 bushels (heaped) conveyed in 1833, not quite 2 cents the bushel, (1½ cents was the estimate,) and 17,000 bushels the next year, only 1⅞ cents per bushel. This does not include any payment for the marl, as he was charged nothing for it. But if half a cent the bushel be allowed for that (which is enough,) his marl of the second year would still have cost him but little more than 2 cents when put out on his landing place.

But of the many who want to buy marl, and who would very gladly pay 3 cents, (and who in fact have paid 4 to 5 cents, or more,) none have been willing to undertake to be their own carriers. And while they have paid more than twice the amount of fair prices for lightering, the persons engaged in that business have made but little profit, owing to the ignorance, laziness, and worthlessness of most of the hiring hands who man the river lighters. Mr. Hill Carter (of Shirley) next to Col. Minge, was the earliest and has been the most extensive applier of water-borne marl on the borders of James River. But though he likewise obtained his early supplies gratuitously, (paying only for the labor performed,) he has never been able to have marl put on his shore at less than 4½ cents; and yet, after seeing the effects of his early applications, he was so anxious to extend it to all his land, that he requested and authorized us to contract with any responsible person to furnish him marl enough, and regularly, at 5 cents the bushel. We were unable, at that time, to induce any proper person to undertake that large contract, and therefore it was not effected; though we were as well persuaded then as now, that even at 2 cents less, a good and sufficient profit would have been afforded to the other party. Under this opinion we rather discouraged the paying the high prices then asked, and advised several persons who would otherwise have bought, to wait for more moderate terms—or, still better, to become their own carriers. But to this time, the price has been very little reduced, (4 cents being the lowest yet paid, under the most favorable circumstances,) and large quantities of marl have been bought and used, at such high prices, though not one-twentieth of what might otherwise have been demanded, at fair prices.

During all this time, we refrained from offering to furnish marl from our beds, except by gift—and that for several reasons. In the first place, we did not choose that our urgent recommendations to others to purchase and use water-borne marl should, *even by possibility*, subject us to the suspicion of being impelled thereto by the desire

of making a pecuniary profit by the business—and therefore, we preferred that others should be undertakers of the business. Next, our own marl, on navigable water, though very rich, is peculiarly difficult to uncover and work, and therefore cannot be so cheaply furnished (to the bushel) as from many other more easily accessible beds. But, after leaving it to others for 8 years to commence this business, and carry it on, and with very little effect, either in reducing prices, or furnishing a regular and sufficient supply at any prices, we presume that we may now make the attempt to furnish a better and cheaper supply, without drawing suspicion on our motives in recommendations made, and opinions expressed, so long ago. According to the advertisement published on the cover of this number, it will be seen that the marl of Coggins Point is offered to be put on board lighters at 2 cents the heaped bushel; or at  $1\frac{1}{2}$  cents, if on contracts for 30,000 bushels or more. If purchasers will furnish their own lighters and hands, the transportation and landing of the marl (within 15 miles distance) may be performed for 1 cent more; and even to hired vessels, regularly employed,  $1\frac{1}{2}$  cents would furnish a sufficient profit—there being a proper wharf or stage at the landing place, and the marl being taken by the purchaser from the deck of the vessel. But no lighter-men will engage at this price for freight—and few can be relied on for regular work at even their own higher prices. Therefore, if this business is to be put on the cheapest and most profitable footing, (and which cannot be except as a large and regular business,) the purchasers of the marl must provide and man their own lighters. If that were done, and proper arrangements made, these terms for large contracts would permit the marl to be carried to distances within 15 miles, for  $2\frac{1}{2}$  to 3 cents the bushel, and 40 or 50 miles for 4 cents. But, to effect this unprecedented (and heretofore almost unhoped for) degree of cheapness, it will be essential that purchasers and land-owners shall operate on a large scale, and to the best advantage in economizing labor, as well as the workers of the beds, and shippers of the marl.

The lime-stone (as it may be truly termed, in regard to its calcareous constitution,) which is furnished by this same bed of marl, is another object of high importance, for cement; and if, as we presume, as rich stone-marl may be found in many other places in Virginia, we might not only be furnished at home with all the lime required for building, but at a much less price than is paid, to an immense amount annually, for the

stone-lime of New England. Directed merely by our knowledge of its chemical constitution, we burnt this lime and used it for our own buildings, eight to ten years ago. Having since sold the farm, (Shellbanks, in Prince George county,) we had not seen the mortar used there, for six years, until a few days ago. The plastering, (of the dwelling house,) which was altogether of this lime, is unusually firm, and has stood better, as Mr. Theron Gee, the present proprietor thinks, than any plastering he has ever known made of other lime. A small part of the brick-work only, for experiment and comparison, was built with mortar made of this lime, in proportions of two measures of sand to one of lime. The mortar is of remarkable and very unusual hardness, and adhesiveness to the bricks, and very far harder, and far better in all respects, than the best oyster shell lime mortar, burnt at the same time, and used on the same day with the lime mortar, and by the same workmen, and in the same job. In fact, the marl-lime mortar is so greatly and strikingly superior, that no observer can doubt but that its value as a cement is increased by some or all the other ingredients which it contains besides the 85 to 90 per cent. of pure carbonate of lime. The remainder of its body is principally siliceous and clay—but is partly made up by small portions of iron, of gypseum, and of some other and more soluble salt. The cement is now much harder than the bricks which it unites, or than the stone from which it was burnt. And though we do not know the strength or value of any other bodies of marl than our own, and do not profess to warrant the fair selection of specimens from any other, (and which selection requires much more care and fidelity than are usually given to the object,) we doubt not but that there is much good material of this kind for mortar, in sundry other marl beds, which it would be greatly for the public benefit, as well as for private profit, to have brought into use.

We take this mode of again inviting the farmers on tide water who want marl, to take the proper course (by building and navigating lighters for themselves,) to make their supply cheap—and thereby to serve the public interests as well as their own, by extending the use of this greater, of agricultural improvers. At a small addition to the prices stated above, the marl could be put on board of sea coasting vessels, and almost as low, as they sometimes have to pay for ballast; so that in this manner it might be delivered in places even as remote as New York or Charleston, at 6 to 8 cents the bushel.

'Those persons who may wish to be more particularly or fully informed of the practical effects and profits of the marl from Coggins Point, are referred to Hill Carter, esq., of Shirley, Col. Collier H. Minge, (now in Mobile,) and Dr. John Minge of Weyanoke. And besides various notices of our own, which of course we would not adduce as testimony in such a case, statements of some of the effects known by the gentlemen just named, may be seen at pages 186, 189, 247 and 511 of vol. 5, Farmers' Register.—  
ED. FAR. REG.

## PEAR TREES.

From the Genesee Farmer.

We find pear trees in less demand than almost any other article in the nursery. Why should this be so? The pear is one of our most delicious fruits: though from the scarcity of trees in the country, it is not improbable that many cultivators have never tasted the better kinds.

As an excuse for neglecting the pear tree, however, we have often heard it said, "they are so long before they begin to bear." Now this is the very reason why they should be planted without delay—why *no time should be lost*.

The remark, however, is only true in part. Some pear trees, indeed, like the Bergamot, require much time to get ready; but others, like the Juvenne, appear to come into bearing as soon as the apple tree; and this trait of character is certainly of no less importance than the color or the size of the fruit, which pomologists are always so careful to mention. If the time required by each kind to come into bearing was generally known, purchasers of young trees could be much better accommodated. Delicious sorts would in all cases be wanted, but we could well afford to wait several years for the summer rose, the rousselette de Rheims, or the belle et bonne, to grow large and get ready, when Williams' bon Chretien, the summer frankleal, or the bloodgood, were bearing in the mean time. Of 81 sorts noticed by Manning in his "Book of Fruits," 17 are mentioned that "come early into bearing," though several belonging to this class, he has not marked; and at this time we have in the nursery, many trees of the Juvenne, not more than six or seven feet high, in full flower. Grafts of this variety, of the Cushing, of the Johannot, &c., set up on old stocks, bore in two years.

The pear is one of our hardiest fruit trees; and so far as our observations have extended, it is neither subject to the attacks of the caterpillar, nor the borer. Some perish, however, with the fire-blight; but it should not be allowed. The owner has as much right to complain of bad luck when he stands by while his cattle are destroying his young trees, as he has when he stands idle, without reaching forth a hand, while *scolytus pyri* destroys his old trees. Possibly, however, there are two kinds of fire-blight; but be this as it may, many of our trees have stood more than twenty years, without any losses of consequence, though the fire-blight has been several times

amongst them—owing entirely, as we believe, to this circumstance: *we have cut off the dying limb, and burnt it without delay.* †

## COMPOST DRESSING FOR MOWING GROUNDS.

From the Monthly Visitor.

In low lands, whether with or without rocks, with or without hard pan, as well upon flat elevations and side hills, as in drained swamps, the crop of hay may be increased to almost any extent by a process infinitely more simple, and less expensive, and much quicker, than by ploughing and hand-labor. The method of making compost-manure is the most simple that can be imagined; it is done with facility on the sides of roads, and in the cow and hog-pens, with the refuse of chip yards, leaves from the woods, peat and mud taken from the ditches, ashes, sand, earth taken from the back yards and sinks, scrapings from streets, with mixtures from almost every article that can be enumerated or imagined,—all will serve as manure for mowing lands, producing the most valuable and lasting effects as used for top-dressing only. These compost heaps should be well turned and intimately mixed before they are applied, when the spring or autumn season will be equally suitable for their operation, taking occasion to sprinkle over it a small quantity of herds-grass seed.

## SUBSOIL PLOUGHING.

From the New England Farmer.

Letter of E. Phinney, esq. to A. Huntington, esq., published in the Transactions of the Essex Agricultural Society, 1840.

A. Huntington, esq.—Dear sir—The question is often asked, how can farming be made profitable? I answer, by liberal manuring, deep and thorough ploughing, and clean culture. I will venture to affirm, without fear of contradiction, that no instance can be cited, where a farmer who has manured his grounds highly, made a judicious use of the plough, and cultivated with care, has failed to receive an ample remuneration for the amount invested—nay more, that has not received a greater advance upon his outlay than the average profit derived from any other business. One great difficulty is, that most farmers seem not to be aware of the fact, that the greater the outlay, to a reasonable extent, when skilfully applied, the greater will be the profit; they therefore manure sparingly, plough shallow, and the consequence is, get poorly paid for their labor. This has raised a prejudice and given a disinclination to the business of farming, especially among those who are in the habit and are desirous of realizing something more from their occupation than a naked return of the amount expended.

The farmer who is so sparing of his manure that he can get but thirty bushels of corn from an acre, gets barely enough to pay him for the expense of cultivation; and in addition to this, by the ordinary method of ploughing, his field, at each successive rotation, is deteriorating, his crops becoming less, and in a few years he finds

he must abandon his exhausted and worn out fields, to seek a subsistence for himself and family in some other business, or in some other region, where the hand, of man has been less wasteful of the bounties of nature.

Instead then of his scanty manuring of ten cart-loads to the acre, which will give him but thirty bushels of corn, let him apply thirty loads. This additional twenty loads, at the usual price of manure in this part of the country, will cost him thirty dollars. But he now, instead of thirty bushels of corn, gets sixty bushels, and the increased quantity of stover will more than pay for the excess of labor required in cultivating and harvesting the large crop over that of the small one. He has then added thirty bushels of corn to his crop by means of twenty loads of manure, which at the usual price of one dollar per bushel, pays him, in the first crop, for his extra outlay. His acre of land is laid to grass after taking off the corn, and the effect of his twenty loads of additional manuring will be to give him, at the lowest estimate, three additional tons of hay in the three first years of mowing it, worth fifteen dollars a ton standing in the field. Now look at the result. His thirty dollars expended for extra manuring was paid for in the first year's crop, and at the end of three years more he will have received forty-five dollars profit on his outlay of thirty dollars: and in addition to this, his land is improved, and in much better condition for a second rotation. There is no delusion in this. It is a practical result, of the reality of which any farmer may satisfy himself, who will take the trouble to try the experiment.

From no item of outlays can the farmer derive so ample and so certain a profit, as from his expenditures for manure to a certain extent. This has been most strikingly verified by some of our West Cambridge farmers. It is not uncommon among some of the farmers in that town, to put on their grounds one hundred dollars' worth of manure to the acre, and in more instances than one, the gross sales of produce from ten acres under the plough, have amounted to five thousand dollars in one season. This is the result of high manuring and judicious cultivation, of a soil too which is exceedingly poor and sandy."

The subject of subsoil ploughing is one upon which there has been little said, and less done, in this part of the country. In all our grounds, except those which are very loose and sandy, there is no doubt that great benefit would be derived from the use of the subsoil plough. In England, the effect of subsoil ploughing in increasing their crops, as stated by some agricultural writers, would seem almost incredible. By this means, the crops in that country have been doubled, and in many instances trebled. The expense, however, is stated to be very great—so great as to be beyond the means of most of our farmers. In one case the expense of subsoil ploughing on a farm of over five hundred acres, was estimated by the owner to cost the enormous sum of thirteen hundred pounds sterling. This calculation took into consideration the use of the heavy Deanston plough, which always required four, and in some stiff clays, six horses to work it. I am aware that an implement might be constructed, which though it might not do the business quite so well, could, nevertheless, be made

highly beneficial in the hands of our farmers, and obtained at a far less cost. I am informed that Mr. Bosson, of the Yankee Farmer, has, with a highly praise-worthy zeal in the interest of agriculture, imported from England a subsoil plough, which may be worked with a less powerful team than the one commonly in use in that country.

In a climate like our own, which at that season of the year when our crops, particularly our root crops, most need the benefit of moisture that may be derived from deep ploughing, and are most likely to suffer from drought, the use of the subsoil plough would be attended with unquestionable benefit. On a field of my own, which had been set to an orchard, and therefore kept under the plough for some years, in attempting to underdrain a part of it that was usually flooded by water in the spring of the year, I noticed what the English call the "upper crust." This lay some inches below the surface, at the depth to which the land had been usually ploughed, formed by the treading of the oxen and the movements of the plough over it. This I found to be so hard as to be apparently as impenetrable by the roots as a piece of marble, and discovered to me at once the cause of the failure, in a great measure, of my crop of potatoes the year before. Having discovered what I supposed to be the cause of the failure, I set about devising measures to remedy it.

I have never seen a subsoil plough, there never having been one seen or made in this part of the country. I consulted my ingenious friends, Messrs. Prouty & Mears, and at my request, they made an instrument of very cheap and simple construction, consisting of a wooden beam, about three inches square, and three feet long, with three tines or teeth of the common cultivator, placed in a direct line in the beam, extending about eight inches below the beam; to this handles were attached similar to the handles of a plough. On trying this by running after the drill plough, I found, in my hard stony subsoil, it was quite inadequate to the business, being too light and of insufficient strength. I then had one constructed of similar plan, but much heavier and stronger. The beam five feet long, six inches square, of white oak, well ironed, with three tines in nearly a right line, made of the best Swedes iron, one and a half inches square, extending twelve inches below the beam, with a spur at the foot, some less than that of the tine of the cultivator, with strong handles and an iron beam extending from each handle to the centre of the beam, by which the balance is easily preserved. This implement, drawn by two yoke of oxen, followed the drill plough in getting in carrots, and performed the work better than I had anticipated. The "upper crust" gave way, the resistance made by the hard gravelly bottom and smaller stones was readily overcome. The earth was loosened in most places twelve or fourteen inches from the surface, and though not so thoroughly pulverized as it probably would have been by a perfect subsoil plough, yet in my very hard, stony subsoil, I am inclined to believe, that for simple drill husbandry, this will be found to be a valuable substitute for the English subsoil plough. And considering the small price of the implement, and the greater ease with which it is worked, the friction being

much lessened by dispensing with the sole, I shall continue to use this until I can find a better. A part of my crop of carrots was sowed upon the same land appropriated for that crop last year; no more manure was applied than in the previous year, and notwithstanding the severe drought which greatly injured most of our root crops, my crop on this piece of land was nearly double to that of last year. There is no known cause to which I can attribute this great increase of the produce, but the use of my newly constructed substitute for a subsoil plough. The soil was stirred to the depth of fourteen inches; by this means the roots of the carrots were enabled to strike deep, and thereby not only find more nourishment, but to overcome, in a great measure, the effects of a very pinching drought. E. PHINNEY.

Lexington, Mass.

#### AN EXPERIMENT IN FATTENING WHITE AND BLACK BERKSHIRE PIGS.

From the Kentucky Farmer.

I send you an experiment made by Mr. Fanning (editor of the Tennessee Agriculturist) and myself in feeding pigs. This experiment grew out of a controversy whether there were Berkshire hogs of any other color than those that are almost black. I maintained that there were white hogs descended from the Berkshire family, that were better than the black ones, possessing early maturity and fattening qualities not possessed by the blacks. Mr. Fanning predicted that the whites would prove themselves far inferior to the blacks, the *ne plus ultra* of the hog kind.

I proposed feeding pigs six months to test their early maturity and fattening qualities, to which he acceded, but objected to my feeding one from a black Berkshire sow by my white boar. He preferred that I should feed a cross of the white Berkshire and Woburn.

Mr. Fanning selected two pigs by his imported black Berkshire boar Earl Spencer, dam the imported black Berkshire sow Mary.

I selected two pigs by my imported white Berkshire boar Albion, dam my Woburn sow Courtenay.

Mr. Fanning weighed and commenced feeding at two months old, and at six months his pigs weighed, Sally B. 145, Black Rose 136 lbs. His gain (supposing Black Rose weighed as much at the commencement as Sally B. for he does not give her weight at commencement,) gained in four months 221 lbs.

I did not commence full feeding of mine until 20th January, when they were 4 months and two days old. Bernice weighed 20th January, 116 pounds, on the 20th February, 185 lbs., on the 22d March, 254 lbs., on the 20th April, 303 lbs., on the 20th May, 342 pounds.

Bertha weighed on 20th January, 4 months and two days old, 108½ lbs., on the 20th February 174 lbs., on the 22d of March, 232 lbs., on the 20th of April, 285 lbs., on 20th May, 340 lbs. My pigs gained in sixty one days 261 lbs., forty pounds more than Mr. Fanning's gained in one hundred and twenty days.

Mr. Fanning proposed keeping an account of food given to each, but I find he has failed to do

so. I had an account kept of all that was given mine, but no account of what was taken from them again. For there was more food given than they would eat, and before they were fed again whatever had been left was given to other pigs.

SAML. D. MARTIN.

Colbyville, Ky.

#### OF BOTTOM HEAT.

From Lindley's Horticulture.

This term is, in common practice, made use of only in those cases where the temperature of the soil in which plants grow is artificially raised considerably above that which we are acquainted with in England; and there seems to be a general idea that such an artificial elevation of temperature is only necessary in a few special instances. It has, however, been shown that the mean temperature of that part of the soil in which plants grow is universally something higher than that of the air by which they are surrounded, and consequently it appears that nature, in all cases, employs some degree of bottom heat as a stimulus and protection\* to vegetation. At the same time, it must be admitted that, in some cases, the amount is extremely small; for Von Baer found *Ranunculus nivalis* and *Oxyria reniformis* flowering in Nova Zembla, where the soil was not warmed above 34½°; and, in Jakutzek, Erdmann\* states that summer wheat, rye, cabbages, turnips, radishes, and potatoes are cultivated, although the ground is not thawed above three feet in depth.

That elevating the temperature of moist soil produces an unusual degree of vigor in plants unaccustomed in nature to such an elevation, is a fact which requires no proof: it is attested by the condition of vegetation round hot springs, and in places artificially heated by subterraneous fires; and this has probably been the cause of the employment of tan and hotbeds, by which means bottom heat has been generally obtained for rearing delicate species, and especially seeds. But if this stimulus acts in the first instance beneficially in all cases alike, it soon becomes a source of mischief in those species which are natives of climates where such terrestrial heat is unknown, the latter "drawing up," as the saying is, becoming

\* That the warmth of the soil acts as a protection to plants may be easily understood. A plant is penetrated in all directions by innumerable microscopic air passages and chambers, so that there is a free communication between its extremities. It may therefore be conceived that if, as necessarily happens, the air inside the plant is in motion, the effect of warming the air in the roots will be to raise the internal temperature of the whole individual; and the same is true of its fluids. Now, when the temperature of the soil is raised to 150° at noonday by the force of the solar rays, it will retain a considerable part of that warmth during the night; but the temperature of the air may fall to such a degree that the excitability of a plant would be too much and suddenly impaired, if it acquired the coldness of the medium surrounding it; this is prevented, we may suppose, by the warmth communicated to the general system from the soil, through the roots; so that the lowering of the temperature of the air, by radiation during the night, is unable to affect plants injuriously, in consequence of the antagonist force exercised by the heated soil.

weak and sickly, and speedily presenting a diseased appearance.

On the other hand, it is equally well known that, unless the temperature of the soil be raised permanently to at least 75°, the seeds of tropical trees will not germinate; or, if they do, they push forth feebly, and from the first present the sickly appearance of plants suffering from cold. Hence arises the impossibility of making the seeds of tropical plants germinate when sown in the open air in this country, where the mean temperature of the earth seldom rises to 65°, and that for only short periods of time. It is, therefore, obvious that all plants require some bottom heat; but the amount varies with their species, and the only means or power of determining what the amount should be, is afforded by the known degree of warmth of the climate of which a plant may be a native.

When plants are cultivated in glass houses, there is little difficulty in supplying them with the amount of bottom heat which they may require; but this can either not be effected at all, or only to a limited degree by a selection of soils and situations, when plants are cultivated in the open air; and hence one of the many difficulties of acclimatizing in a cold country the species of a warmer climate. It is true that plants will exist within wide limits of temperature, and, consequently, a few degrees of difference in the natural bottom heat to which they are exposed may not affect them so far as to destroy them; but it cannot be doubted that the conditions most favorable to their growth are those which embrace a temperature rather above than below that to which they are accustomed in their native haunts.

The orange tree is found in perfection where the temperature of the soil may be computed to rise to 80° or 85°, and never to fall below 58°, as in the Bermudas, Malta, and Canton. How injudicious, then, is our practice of exposing it during summer to the open air, in tubs, where the soil scarcely rises in temperature above 66°, and preserving it during winter in cold conservatories, the soil of which often sinks to 36°; under such circumstances the orange exists indeed, but where are the perfume and juiciness of its fruit, and where the healthy vigor of its noble foliage? The vine cannot be grown in the open air of this country to any useful purpose, except when trained to walls, in soils and situations unusually exposed to the beams of the sun; it is only then that it can obtain for its roots such a permanent warmth as 75°, which it will have at Bordeaux, or 80° in Madeira.

It may hence be considered an axiom in horticulture, that all plants require the soil, as well as the atmosphere, in which they grow, to correspond in temperature with that of the countries of which they are natives. It has also been already shown, that the mean temperature of the soil should be a degree or two above that of the atmosphere.

This explains why it is that hardy trees, over whose roots earth has been heaped or paving laid, are found to suffer so much, or even to die; in such cases, the earth in which the roots are growing is constantly much colder than the atmosphere, instead of warmer. We have here,\* also,

the cause of the common circumstance of vines that are forced early not setting their fruit well, when their roots are in the external border and unprotected by artificial means; and to the same cause is often to be ascribed the shrivelling of grapes, which, as we all know, most commonly happens to vines whose roots are in a cold and unshaded border.

Mr. Reid of Balcarras has, indeed, shown that one of the causes of canker and immature fruit even in orchards is the coldness of the soil. He found that, in a cankered orchard, the roots of the trees had entered the earth to the depth of 3 feet; and he also ascertained that, during the summer months, the average heat of the soil, at 6 inches below the surface, was 61°; at 9 inches, 57°; at 18 inches, 50°; and at 3 feet, 44°. He took measures to confine the roots to the soil near the surface, and the consequence was, the disappearance of canker, and ripening of the fruit. (*Memoirs of Caledonian Hort. Soc.* vi. part 2; and *Gardener's Magazine*, vii. 55.)

If, on the other hand, we take cases of growth in the artificial climate of hot-houses, we find that *Bignonia venusta*, and many other tropical plants, will not flower unless in a high bottom heat; and that palm trees, planted in the soil of conservatories which it is impracticable to heat sufficiently, soon become unhealthy.

The reason why it is necessary to plants in a growing state, that the mean temperature of the earth should be higher than that of the air, is sufficiently obvious. Warmth acts as a stimulus to the vital forces, and its operation is in proportion to its amount, within certain limits. If, then, the branches and leaves of a plant are stimulated by warmth to a greater degree than the roots, they will consume the sap of the stem faster than the roots can renew it; and, therefore, nature takes care to provide against this by giving to the roots a medium permanently more stimulating, that is, warmer, than to the branches and leaves.

Such being the fact, it is obvious that one of the first of a gardener's cares should be, to secure

fact connected with this subject:—"It is well known," he said, "that the bark of oak trees is usually stripped off in the spring, and that in the same season the bark of other trees may be easily detached from their alburnum, or sap-wood, from which it is, at that season, separated, by the intervention of a mixed cellular and mucilaginous substance; this is apparently employed in the organization of a new layer of fibre, or inner bark, the annual formation of which is essential to the growth of the tree. If, at this period, a severe frosty night, or very cold winds, occur, the bark of the trunk, or main stem, of the oak tree becomes again firmly attached to its alburnum, from which it cannot be separated till the return of milder weather. Neither the health of the tree, nor its foliage, nor its blossoms, appear to sustain any material injury by this sudden suspension of its functions; but the crop of acorns invariably fails. The apple and pear trees appear to be affected to the same extent by similar degrees of cold. Their blossoms, like those of the oak, unfold perfectly well, and present the most healthy and vigorous character; and their pollen sheds freely. Their fruit, also, appears to set well; but the whole, or nearly the whole, falls off just at the period when its growth ought to commence. Some varieties of the apple and pear are much more capable of bearing unfavorable weather than others; and even the oak trees present, in this respect, some dissimilarity of constitution." *Hort. Trans.*, vi. 229.

\* Mr. Knight long since mentioned an important  
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the means of insuring a proper temperature to the soil in which he grows his plants, and that this is requisite for hardy as well as tender species; and I entertain little doubt that the time is at hand when it will be considered quite as necessary to furnish heat for the soil as for the air; not, however, heat without moisture, for that would evidently produce much greater evils than it was intended to cure, as has indeed been found by inconsiderate experimenters. I quite agree with Mr. Writgen in believing that it is the temperature and moisture of a soil, much more than its mineralogical quality, that determine its influence upon vegetation. (See *Erster Jahresbericht, &c., am Mittel und Nieder-Rhein*, p. 64.)

Mr. Fintelmann, the king of Prussia's gardener at Potsdam, is celebrated for his success in the difficult art of forcing cherries, and he has given an account of his practice, (*Gard. Mag.*, vol. iii., p. 64,) in which it appears that the most peculiar feature is the strict attention he pays to the temperature of the roots. He first soaks the roots in water heated by the mixture of equal parts of boiling and cold water; he afterwards sprinkles the trees with lukewarm water, and he continues to employ it of the same temperature as long as watering is required.

It seems indeed clear, that the success of the Dutch in obtaining an abundance of fresh vegetables, such as lettuces, during the whole winter, is in part owing to their being able to maintain a gentle bottom heat. No doubt this is connected with the abundant light which their forcing structures admit, and with other causes of considerable importance; but none of those causes can be supposed likely, in the absence of the bottom heat, to produce such a result as the Dutch gardeners obtain.

If it is necessary that the temperature of the soil in which plants grow should be carefully regulated, and adjusted to their natural habits, it is no less requisite that the water in which aquatics are cultivated should be also brought to a fitting heat. Mr. William Kent succeeded well in making many tropical species flower, by growing them in lead cisterns plunged in a tan-bed, (*Hort. Trans.*, iii. 34,) in a close heat. In like manner, Mr. Christie Duff procured flowers in abundance from *Nymphæa rubra*, *cerulea* and *odorata* by placing them in a cistern in a pine stove upon the end flues, where the fire enters and escapes; or by plunging them into tan-beds in pine houses, varying in temperature from 80° to 100°. (*Hort. Trans.*, vii. 286.) Very lately, Mr. Sylvester, of Chorley, in Lancashire, obtained fine flowers from *Nelumbium luteum*, by paying attention to the temperature of the water. When he kept the latter at 85°, the plants grew vigorously, and were in perfect health, but flowerless; but by lowering it to 70°-75°, which more nearly approaches the heat to which the plant is naturally accustomed, the magnificent blossoms were produced and succeeded by seeds; the red *Nelumbium*, however, which inhabits countries with a greater summer heat than the yellow, at the same time suffered by this lowering of temperature, none of its blossom buds having been able to unfold. (*Bot. Mag.*, xiii. n. s. t. 3753.) The water of rice fields, in which the red *Nelumbium* flourishes, was seen by Meyen at 113°, at Lahtao, in China.

An opinion has, nevertheless, been entertained, that bottom heat is useless: there is in the *Horticultural Transactions* (vol. iii. 288.) a paper to show that it is injurious; and the authority of Mr. Knight has been referred to in support of the opinion, in consequence of that great horticulturist having expressed a belief that the "bark-bed is worse than useless." (*Hort. Trans.*, iv. 73.) But Mr. Knight repeatedly disavowed entertaining any such sentiments. In one place, he stated that the temperature of the air of the stoves in which his pine-apple and other stove plants grew, *without bark or other hot bed*, usually varied from 70° to 85°; and that the mould in his pots, being surrounded by such air, acquired and retained, as it necessarily must, very near the same aggregate temperature, but subject to less extensive variation (*Gard. Mag.*, v. 365); in another, he says the temperature of the air was varied in his stove generally from about 70° to 85° of Fahrenheit; and he ascertained, by keeping a thermometer immersed in the mould of the pots, that the temperature of the soil varied very considerably less than that of the air of the stove; the mould being in the morning generally some degrees warmer than the air of the house, and in the middle of the day, and early part of the evening, some degrees cooler. (*Hort. Trans.*, vii. 255.)

It is, therefore, clear that he considered a high temperature necessary for the roots of his pine-apple plants; and we find, from one of his papers, (*Hort. Trans.*, iv. 544,) that he considered it better to obtain the requisite temperature from the atmosphere than from a bark-bed, the usual source of bottom heat, "because its temperature is constantly subject to excess and defect;" and he even admitted that if the bark-bed could be made to give a steady temperature of about 10° below that of the day temperature of the air in the stove, pine plants would thrive better in a compost of that temperature than in a colder.

It is, therefore, plain that the dispute about bottom heat was not as to the necessity of it, but as to the manner of obtaining it, which, as it concerns the art of gardening, I need not further notice.

We have, doubtless, much to learn as to the proper manner of applying bottom heat to plants, and as to the amount they will bear under particular circumstances. It is, in particular, probable that in hot-houses plants will not bear the same quantity of bottom heat as they receive in nature, because we cannot give them the same amount of light and atmospheric warmth; and it is necessary that we should ascertain experimentally whether it is not a certain proportion between the heat of the air and earth, that we must secure, rather than any absolute amount of bottom heat.

It may also be, indeed it no doubt is, requisite to apply a very high degree of heat to some kinds of plants at particular seasons, although a very much lower amount is suitable afterwards; a remark that is chiefly applicable to the natives of what are called extreme climates, that is to say, where a very high summer temperature is followed by a very low winter temperature. Such countries are Persia, and many parts of the United States, where the summers are excessively hot, and the winter's cold intense. The seeming impossibility of imitating such conditions arti-

cially will probably account for many of the difficulties we experience in bringing certain fruits, the Newtown pippin, the cherry, the grape, the peach, and the almond, to the perfection they acquire in other countries.

#### BERMUDA GRASS.

From the [Milledgeville] Recorder.

**Messrs. Grieve & Orme:**—In one of your March numbers, I invoked the attention of farmers to the exhausted condition of our farms; the ruinous policy of making cotton to purchase corn, flour, and pork with; and, in conclusion, I solicited the aid of the influential and intelligent, in arresting the evils that had and were likely to befall us. None having been aroused at the awful calamity that awaits us, I am constrained, still hoping, to appear over my humble signature again, to defend from the many curses that have been heaped upon it, and to recommend with confidence to farmers, a grass, the name of which heads this article.

I am aware of the Herculean task that I have undertaken, to defend and bring into popular favor a thing that has been almost universally condemned—that nearly every man is prepared to decide against before he hears the testimony; nevertheless, if any thing short of the resurrection of the dead will suffice, I am able to prove that the prejudices entertained against it, are from a want of a correct knowledge of it, both as regards the evils and benefits. Then first, the objections to it; and what are they? They are that where it once gets hold it never can be eradicated; and second, if a farmer gets even a small bed of it on his farm, that there is perfect certainty of its going all over it sooner or later; consequently ruin ensues to the farm. Are you acquainted with the Bermuda grass? does it bear seed? have you ever rubbed them out? Can you distinguish between that and two other grasses that resemble it in all its habits save that of bearing seed, both of which, as well as the Bermuda grass, are frequently by the unobserving called *wire grass*. The name is not applicable to either of the three grasses, but properly belongs to a native of the southern counties of Georgia; hence the name *wire grass counties*. The Bermuda grass, by being confounded with two other grasses very nearly resembling it, and by the imprudence of farmers, who have purchased their neighbors' lands, whose yards were planted in it, has suffered very great prejudice. First by being taken for a grass that is propagated, both from the seed and root; and second, from its becoming scattered over fields from the yards of old settled places, purchased by an adjoining farmer; the houses removed, the yard turned into the adjoining field, an attempt is made to eradicate the grass; the plough passes through the yard and on through the field; at every passage of the plough a sprig or root is taken out on the adjoining ground; it being tenacious of life takes root and grows; thus in a few years the field becomes infested with Bermuda grass, very much to the annoyance of the owner, chargeable to his own bad conduct however. It is abandoned for cultivation, and becomes one

of the richest and best pastures, from which his cows return every evening with the milk streaming from their udders; from which he can take a fat lamb at pleasure, and on which his hogs keep fat without corn; therefore the curse, as he once considered it, was a blessing in disguise.

The two grasses that are confounded with the Bermuda grass, and somewhat resemble it, and very much resemble each other, both bear seed, and therefore are liable to be scattered by stock grazing on it when the seed are ripe. One is a native of swamp lands, will grow in the water, has a black seed when ripe, a jointed stem of a reddish purple color, takes root at every joint, the stem covered with a shuck on which the leaves are formed, around the base of the leaf is covered with a fine furze; in this it differs from the Bermuda, as well as its texture being coarser and not affording as much foliage, less velvet-like in its feeling, and not so grateful to stock. This grass grows on upland, and of a wet year luxuriantly. The other is a native of upland, approaching much nearer the texture of the Bermuda, with a purplish stem, with all the habits of the other, with the fine furze around the base of the leaf, and bears seed; it takes a close observer to distinguish between this and the Bermuda. These two grasses are natives of Georgia, and abound in the neighborhood of Greensboro, where you may also find the Bermuda grass. I have in that town, within five feet of the same spot, gathered sprigs of each, and convinced gentlemen of the difference between them. The Bermuda grass, as I am informed by a gentleman of this county, is a native of the island of Bermuda, was brought to this state by a gentleman who lived in the southern part of the state, and brought to this county from there for a yard grass. By this means it has found its way into most yards of middle Georgia, and by the means above stated, into a few fields. Wherever it has been cultivated for grazing, the most satisfactory result has been obtained. The Bermuda grass bears no seed; and as a proof of my conviction of this fact, I will present any man with a beaver hat who will present me with one half-pint of the seed of that valuable grass. There is therefore no danger of its being spread by stock; it will go no farther than it can run in a season, which on an average is about three feet, unless the sprig is carried by the plough or some other means; it is tenacious of life, and apt to live wherever dropped, especially in wet weather. A twelve-inch plank laid flat on the surface of the ground will confine it as long as the plank will last. It will not grow in the shade; a field of Bermuda grass surrounded with a fence permitted to grow up in the corners with bushes and briars, as they usually are in Georgia, will confine it for all time unless taken out by design. To the objection that it cannot be eradicated, I will remark that it can be as easily destroyed as the northern farmers destroy their herds-grass and green-sward, by the same sort of operation, or by covering it with litter and excluding the light and heat from it; and when the grass is destroyed you have a field richer than it ever was, if the grass had been on it ten or twelve years. There is, however, no necessity for destroying it, because it will pay a better profit for grazing than any land you cultivate. Experience has proved



that we need a grazing grass that will stand our long hot summers, that will through the year impart the greatest nutriment to the animal, that the tooth or the hoof will not destroy, and re-appear the next spring without cultivation, with renewed vigor, and continue to do it for all time; Then you have it in the Bermuda grass; though the tooth of the animal may take off the foliage, and the hoof press the remaining stubble, it is not hurt; it puts forth with renewed vigor, and the hotter the sun the more luxuriant it is.

I am assured by a gentleman who was raised in the state of New-York, and that part most famous for grazing, that the Bermuda grass by far surpasses any grass for grazing that he ever saw in New York. I am also informed by a Kentuckian that it by far surpasses any of the grasses of that state for durability of grazing and ability to stand the length and heat of summer. I do know that horses, cows, sheep and hogs will get fat on this grass; that it will afford good grazing from the middle of April until the first of December, in this section of country; that it will grow well on poor land, and eventually make it rich. If it were necessary, I could name particular instances which have proved the value of this grass beyond dispute; but I deem it unnecessary, as the whole ground of objection to it is, the danger of its getting scattered over the farm, and the impossibility to eradicate it when so scattered. Now, knowing that the Bermuda grass bears no seed, that it can only be scattered by a sprig or the root, that it will not grow in the shade, consequently will not pass a Georgia fence, the corners of which are usually choked with bushes and briars—these facts, I say, have stripped it of all its imaginary horrors, and placed it in a position that justice may be done it; and for the benefit of the over-scrupulous I will assert, that I have known it in a yard for the last twenty-five years—lived on the place—the cows and horses were turned in daily through the summer to keep the grass down, and there never was a sprig seen any where on the plantation but in the yard. Another case: some fifteen years since, I knew a farmer to plant a lot of some five acres. It was separated from the cultivated land on two sides by a Georgia fence through which it has not passed to this day. It is admitted on all hands, notwithstanding our staple is cotton, that if we could raise the grasses as well as they can in the northern and western states, that we might raise our own horses, mules and pork; but while we have to resort wholly to the corn-crib, the thing is impracticable: we can make more money, and make it faster, to purchase those articles from the Kentuckians with a part of the proceeds of our cotton. This ruinous policy I will not stop here to controvert, even under the present uncultivated state of the grasses, but merely remark, if we had the money back from Kentucky—to say nothing of the interest—that we have paid for horses, mules and hogs, it would pay the whole indebtedness of Georgia, educate all its poor children, and there would then be a remaining surplus sufficiently large to establish a sinking fund, the interest of which would foster agricultural societies in every county in the state. In addition to this, but for the murderous policy of making cotton to purchase every other thing with, Georgia might have been

the garden spot of the world, and her inhabitants the most independent of any other people.

In this apparent digression I have not lost sight of my subject; in fact it is intimately connected with it; for I look to Bermuda grass as best adapted to our climate of any other for grazing, that by its cultivation we will be able to compete with Kentucky in raising stock. As soon as this fact is believed—and believed it will be, if no other way, from sheer necessity—we shall begin to look up; for then every farmer will have to sell a little corn, a little pork, a few bushels of wheat, fodder and oats, every year, and occasionally a horse or mule. No argument need be used or proofs adduced to show the ability of the Bermuda grass to bear grazing or impart nutriment to animals; and having shown that the objection to it is ideal, that it will not spread without design or bad management, and that it can be eradicated at pleasure, I can, with some hope of success, recommend to every farmer the selection of some suitable exhausted field, in quantity sufficient for the stock that he necessarily has to keep, with running water in it, having such location as will be most convenient for the turning in and out of stock. This done, and in three years it will be worth more to him per acre than the best land he cultivates in cotton, and that at fifteen cents per pound. If any one doubts the latter assertion, I have the proofs at hand.

CLODHOOPER.

Hancock, June 8, 1841.

#### MANURINGS—IMPROVEMENT.

To the Editor of the Farmers' Register.

Thinking it likely that some fellow agriculturist may gather a valuable hint by the promulgation of my manurings operations, I send the following. I count my manurings from July till July, and although the operative year has not closed, yet having at this time nothing else to attend to, (it being a rainy day,) I will copy from my memorandum book so far as it goes, and guess at the balance.

	Ox cart loads.
Moved and spread rich mould, - - -	1500
" from hog yards, - - -	223
" from horse yards, - - -	187
" from cattle yard, - - -	590
" damaged straw, hay and chaff, - -	20
Actually carted out to 4th May, - - -	2520
On sheep yard suppose, - - -	50
Tobacco trash and ashes in houses, -	10
300 bushels ashes equal to, - - -	60
Compost, dead animals, ashes and mould, -	150
Yet to come from horse yard, - - -	40
	2890
Ploughed down 50 acres of millet, rye and peas since July, equal to - - -	1000
Cut down 25 acres heavy timber to rot, -	600
Drift mould and waterings on millet, -	250
Out feedings of sheep and cows, - - -	250
	4990
As to the tobacco trash, ashes, and yet to come	

from horse yard, I am persuaded my estimate is too low. As to the composted dead animals the quantity will actually be about 50 loads, which I have computed as equal to 150 loads of common dung. The balance of the account is genuine guess work; but I think I have guessed reasonably. Thus it will be seen, that by the first of July I will have moved and spread about 2665 ox-cart loads of manure, the value of which I would estimate as equal to 2115 loads of dung; to which add 1000 loads for green fallow, 600 for rotten timber, and 500 for drift mould, and out feedings, and we have a sum total of 4215 ox-cart loads of dung. At 50 loads to the acre, I will have manured 84 acres; and having only six laborers at my place of residence last year, I will have manured 14 acres for each hand. My resources for manure, are the offal of Indian corn, rye, wheat, oats, millet, peas, hay, leaves from woods, saw dust, ashes, mould, green weeds and grasses, and dead animals. My cattle yards are littered with corn stalks, leaves, and straw. My horse yard is littered with leaves, and saw dust. My hog yards are littered with leaves, corn cobs (which the hogs eat,) green corn stalks, green weeds, &c. The carted mould is obtained from reservoirs made for the purpose. The drift mould is cast on, or floated on, from ditches around the hills. The saw dust is obtained from a saw mill, and amounts to an average of about 50 loads the year, but if properly secured would be at least 400 loads the year. I have used the mould from my reservoirs, under, in, and on my manure banks; but this year the greater portion, viz., the 1500 loads, were spread directly on the field, and I am inclined to think that I shall continue the practice.

Fifteen years back my lands were dead, and my cattle, sheep, and hogs dying; but now my lands and stock of animals are in good heart. But perhaps one may ask, if my stock are all in good heart, whence comes this 50 loads of composted animal matter? Well, friend, the truth shall come, out of 220 grown sheep I had about 25 to die, and out of about 85 lambs I had about 35 to die; besides one old cow and one runt calf; all of which are neatly vaulted, and undergoing decomposition and composition. When it is remembered that we had a hard winter, and a tight spring; and when I state that I have been housed nearly all the winter with rheumatism; and furthermore that my horses and hogs are all fat, nor have I lost one, I hope I shall be acquitted, at least of murder in the first degree.

The compost from my vault is intended for turnips, and by using a considerable portion of strong ashes, it is expected to be ready for use by the first of August. I am now engaged in carting leaves into my horse and hog yards, and expect to get in 600 loads before I cease; and next year hope to cart out double the above quantity. If I were not a grower of tobacco, I could now begin to farm in good order; but I need pasture grounds, and tobacco is the best preparatory crop.

My mould having been piled, is mostly carted in the dead of winter, when it has to be buried up with a crow bar; thus I move heavy loads, and economize time. Saw dust will not act directly as manure unless the acid which it contains is neutralized by lime, ashes, or strong dung; hence my reason for composting it. A considerable

portion of my bottom grounds, and some of my hills, were a few years past of very acid character, but by deep ploughings and manurings they are now generally warm and productive. I have used no lime as it would cost me about 30 cents the bushel; nor have I used many ashes until last year.

Before I close, I desire to say a few more words on the subject of the dead sheep, as it seems to me this is the only dark part of my story. I had the misfortune to loose one fifth part of my flock, lambs included; now reader, what portion did you lose? And finally I have several sheep of full blood, both grown and lambs, not one of which is dead or missing—and why? because they were well attended, and perhaps more healthy.

My sheep will in a few days be washed in a yard on which leaves have been spread, the manure from which, with that from the hog yard, will not be moved till next winter.

Z. A. DRUMMOND.

Amherst, May 5th, 1841.

#### ORNAMENTAL GROVES.

To the Editor of the Farmers' Register.

Who is there conversant with ancient history, that has not read of the groves of Academus, and, in our own day, heard much of the knowledge acquired, and pleasures enjoyed, beneath academic shades? But of these pleasing topics I shall not speak, whilst reformation is called for *nearer home*. Every lover of nature has been frequently surprised at the indifference which exists in the community respecting tastefully set groves. In nothing has nature been more prodigal of her charms than in the vegetable kingdom; and, next to a well-regulated farm, it is peculiarly delightful to see a choice selection of trees and shrubs around the family mansion. The snug log-cabin as well as the costly palace are thus alike improved in appearance, and enhanced in value, through the simple agency of *natural association*. How sultry and uninviting the prospect around that house, where are no trees to be ruffled by the passing breeze, and to comfort with their shade under the ardent heats of summer. The lack is apparent—the nakedness felt, as we approach such a dwelling. Can it be wondered at, then, that Solomon “spoke of trees, of the cedar tree that is in Lebanon, even unto the hyssop that springeth out of the wall,” and that many of his most choice comparisons are drawn from the *natural beauties* with which he was surrounded. Where can we find all the colors of the rainbow, with a thousand other variegated tints of indescribable delicacy, so richly portrayed as in the wide domain of nature?

Below are briefly pointed out a few of those trees and shrubs indigenous to the United States, and best adapted for useful or ornamental purposes, with their popular names attached.

Robinia, pseudo-acacia—black locust, false acacia. This is not only an ornamental, but extremely valuable tree. It bears transplanting remarkably well, will vegetate from the seed, is of vigorous growth, and constitutes the most durable material for garden or fence posts in the United

States. Nothing but its scarcity prevents it from being used extensively in ship-building. It should be propagated abundantly on every farm for useful purposes. The mulberry, of different species, ranks next to it in point of durability. Grows vigorously along the margin of large water-courses, but is sparingly dispersed.

*Robinia viscosa*—clammy locust, rose locust. This is a small tree with beautiful rose-colored flowers, generally in pendent racemes. It bears transplanting, and soon attains a sufficient size to display its bloom. It is peculiarly adapted to ornamental purposes, and is just beginning to be cultivated and prized near its native localities. Its young wood is covered with a viscid pubescence; hence its name. Grows along the mountain streams of Carolina and Georgia.

*Robinia hispida*—hispid locust, rose locust. This is a small but handsome species, seldom exceeding three feet in height. Flowers larger than in the preceding species; in pendulous racemes. Much of the shrub is very *hispid*, or covered with short, stiff hairs. Grows on dry ridges.

*Magnolia macrophylla*—magnolia. This is, perhaps, the most splendid flowering tree in America. The localities of this interesting species are extremely few. Its most noted southern locality is in Lincoln county, N. C., where it grows in considerable abundance, and from which source many of the northern botanic gardens have been supplied. It is chiefly found in the south-eastern part of the county, on many of the abrupt but fertile hill-sides. It prefers a northern exposure, thus indicating a *cool situation* to be its most favored *retreat*. Its blossoms are of a snowy whiteness, from six to ten inches in diameter, attached to the extremities of its branches, thus fairly unfolding its beauties. The leaves vary from 20 to 30 inches in length, and from 10 to 15 inches in breadth. It should be transplanted late in the fall, or in the winter; and to ensure its future growth it is always advisable, when it can be done, to remove some of its native soil. It flourishes best in a light, *virgin* soil, and where it is kept *cool* and damp by surrounding trees.

*Magnolia acuminata*—cucumber tree. This is a much more common, and rather hardier species than the preceding, but of less attractive grandeur. It is sparingly cultivated.

*Magnolia grandiflora*—magnolia. This is also a magnificent tree, rising from 60 to 80 feet in height, with a smooth columnar trunk, and crowned with a beautiful pyramidal head of sweetest perennial verdure. It grows abundantly in Florida and along the sea-coast of Carolina and Georgia, extending some distance into the country.

*Chionanthus Virginicus*—fringe tree, white ash. A handsome bush, sparingly diffused along our water-courses, varying from 6 to 12 feet high, and may be readily recognised by its numerous pendant blossoms like fringe.

*Calycanthus floridus*—Carolina allspice, bubby blossoms, &c. A small odoriferous shrub, from 3 to 6 feet high, with dark brown flowers, and agreeably scented, like ripe strawberries. Grows generally in fertile soils near small water-courses. The wood, and particularly the root, is strongly camphorated.

*Æsculus flava*—buckeye, horse-chestnut. This is our most common species, and sufficiently handsome to merit cultivation. Elliott says "the root

of the buckeye is used as a substitute for soap in washing woollen clothes."

*Pyrus coronaria*—crab apple. This is a well known tree. Under proper management it presents an oval top, covered in the spring with a rich profusion of the most fragrant flowers. It should find a place in every ornamental grove. From it, by judicious culture and grafting, has sprung the great variety of cultivated apples: a convincing proof of what astonishing changes culture will produce.

*Kalmia angustifolia*—laurel, calico bush, ivy. Handsome evergreen shrubs, common on water-courses, but are not successfully transplanted unless a considerable portion of the circumjacent earth is removed with them. Another species (*kalmia latifolia*) is occasionally found, of nearly similar beauty. The leaves of both are poisonous.

*Rhododendron maximum*—mountain laurel.—This is also a beautiful shrub, but more confined to mountain declivities and precipitous heights. Like the preceding, it does not flourish well in gardens or enclosures, seeming to require cool, perennial streams for its support.

*Euonymus Americanus*—strawberry tree, burning bush, &c. A shrub from 3 to 6 feet high, with deep-green branches. Grows in rich, damp soils. The fruit, when mature, resembles strawberries, and thus renders the tree ornamental.

*Juniperus Virginiana*—red cedar. This is the only indigenous tree in the south which has become a general favorite in our yards, and which every body knows. This is as it should be. It is an evergreen, and forms an agreeable contrast in the gloom of winter, when all other trees are stripped of their foliage.

*Pinus canadensis*—hemlock spruce. A beautiful tree, common in our mountains, rising from 30 to 100 feet in height, presenting a handsome sugar loaf top. It richly merits a place in our enclosures.

*Quercus phellos*—willow oak. An aquatic species, but adapts itself to most of our clay soils, and forms a handsome tree.

*Ulmus Americana*—American elm. This is our most common species. When transplanted in a rich, loamy soil, it grows rapidly, and forms a magnificent shade tree, possessing highly attractive qualities under a midday August sun.

*Salix Babylonica*—weeping willow. A well known tree, introduced, but now naturalized. It has numerous pendant branches, of *sorrowful*, but *interesting* appearance. "Supposed to be the willow on which the Israelites hung their harps when captive in Babylon." May it not typify "the joys of grief?"

*Catalpa cordifolia*—Catalpa tree. A handsome tree when young and vigorous; said also to be a native of Japan. Rarely to be met with decidedly indigenous in the United States, and appears to have been introduced by the *aborigines*; hence its name is supposed to have been derived from the Catawba tribe of Indians, residing on the river of the same name. Its wood is said to be durable, being split for rails in the forests of the Wabash, Ill., where it grows in considerable abundance in a few localities. Grows also sparingly in the Carolinas and Georgia.

The above is but a meager enumeration of indigenous trees and shrubs that might be used to decorate our enclosures. In the grove surrounding

my family mansion, containing about one acre and a fourth, are now growing upwards of forty different species of trees, which number I expect to increase as opportunities may present themselves, not, however, to the entire exclusion of a few ornamental exotics.

I cannot conclude without noticing a handsome vine, *Lonicera sempervirens*, woodbine. It has crimson colored blossoms, and is sparingly scattered over our southern country. It bears transplanting, and forms a spiral wreath sufficiently handsome for some bridal occasion. Our southern ladies are beginning to cultivate it; and having *pliancy* as well as *beauty*, it will be adequately adapted to *wind up* my essay. Respectfully yours,  
C. L. HUNTER.

#### ON A NEW MODE OF TRANSPLANTING TURNIPS.

(Prize Essay of the Highland and Agricultural Society.)

By James Howison, esq., of Crossburn House, Lanarkshire.

From the London Farmers' Magazine.

I am aware that, in some instances, with the Swedish variety of turnips, trials on a small scale have succeeded by following the same steps as in transplanting kale plants, and which success I ascribe to the formation of the Swedish turnip roots greatly resembling those of kale in size and firmness, properties which all the other varieties possess in a very small degree. It is owing to this circumstance, I am of opinion, that all the attempts to transplant the others in the same way have failed, as will be seen in my mode, which, although easy and quickly performed, requires a good deal of method.

I shall describe in detail the method followed by me from the forming of the drills to the finishing of the transplanting of the young plants.

1. In an open piece of ground I form raised drills at the distance of twelve inches from centre to centre, in each of which I place a layer of short stable dung, closely laid on, on which the turnip seed is pretty thickly sown, and afterwards covered with half an inch of fine mould. The breadth of the drills at top should not be more than four inches, so that the earth and plants may be more completely lifted up together by the spade, when to be transplanted. The time of sowing should be regulated according to the purposes intended; and as a fall of ground converted into drills will produce plants sufficient for transplanting three or four acres, it is better always to have a superabundance. As to the best age for taking up the plants, I have found no difference in their success from the time they have got their proper leaves, until they are three or four months old; however, those intended to remain long should be thinned out in the rows. I need scarcely mention that, in dry weather, they should be carefully watered, which in so small a space can easily be done, and which is one of the great advantages which this mode has over the turnip seed sown in the field, where, if no rain falls, it may remain for weeks without vegetating.

2. I shall now state the method followed in removing the young plants from the drills, and transplanting them out in the field, after the ground has been ridged up in the usual way; but I must first observe, that I consider rainy and cloudy weather as of the utmost importance to successful transplanting; and so much so, that I prefer waiting weeks to attempting it in sunny and dry weather. Having provided a wheel-barrow, a garden spade, and a couple of flower-pot saucers of a large size, I with the spade lift up its breadth of one of the drills, taking care that the spade enters below the roots of plants. This spadeful is then carefully placed in the barrow, and the same operation is repeated until the quantity of plants wanted is taken up. When that is done, they are then removed in the barrow to the field, where they are transplanted with the implements above mentioned.

It is necessary for expedition that two persons be employed in the transplanting—one to prepare the plants, the other to transplant them. One spadeful is then taken from the barrow, and with a knife divided in three or four pieces, one of which is taken up into the hand and carefully drawn asunder, so as to lay open the roots of the plants with as little injury to them as possible, and, taking hold of the leaves of the one that appears uppermost, draw it gently out with as many of the little balls of earth and dung adhering to its tender roots as practicable, and place it in one of the saucers. In this way, when the saucers have been carefully filled with the plants laid in regular rows, the planter may commence his operations.

He then with his finger, or a short dibble not thicker than his finger, makes a hole which should only reach to the dung; and then, lifting a plant by its leaves, drops it into the hole, and with the fingers of both hands presses the earth gently around it. In this way two drills may be planted at the same time.

His assistant, following with the barrow, will be able to supply him with prepared plants; and, from my experience, the two should be able to finish a rood of ground in the course of the day, if the plants are eight inches distant from each other.

I must here warn the planter against using plants that have not one or more balls of dung or earth adhering to their roots; for if he does, the chance of their growing will be very small.

3. I may now mention what I conceive to be the advantages that raising plants in seed-drills for transplanting has over the present mode of field sowing. In the first place, as already noticed, when the turnip-seed is sown at large in the field, should it not rain, it is liable to remain for weeks without vegetating; and even if regular showers fall, the crop is liable to suffer greatly from the fly; both of which evils are prevented by raising the plants in drills, as these can be regularly watered, and the plants are too numerous, from the thick sowing, to be much hurt by the fly. In the second place, in the case of a failure in the potato crop, such as took place a few years ago to so serious an amount, the length of time that elapses before potatoes appear above ground, and a certainty of crop can be ascertained, it is too late to attempt planting a second crop of potatoes on the same ground, or even sowing it with turnip

seed, to have any prospect of a crop. Now, as potato-drills are made up in the same way as for turnips, by transplanting them with turnip plants two or three months old, the potato ground might be stocked immediately with the probability of a crop of turnips equally good as if sown with seed at the proper season. In the same way, the head and foot ridges of potato and turnip fields, which at present are left unoccupied to allow the turning of the horses and ploughs in the working of these crops, might be planted with turnips, as also all vacant grounds in gardens, after the gathering of the early crops.

4. In farther proof of the practicability of my plan, it may be satisfactory to mention that, on the 9th of October, 1839, I went to examine a field of turnips on the farm of Green Burnside, in this parish, tenanted by Mr. James Cassie, who in consequence of the great ravages of the fly, had resolved to try the transplanting plan according to my directions; but having no prepared plants, he took plants with great care from the thickest parts of the drills that had escaped the ravages of the fly, and filled up the blanks to a certain extent; and not having much confidence in my method, the blanks on the remainder of the drills were, at the same time, sown with seed, so that I had an opportunity of seeing at once three crops of turnips raised in a different manner. The crop from the first sowing that had escaped the ravages of the fly was excellent; the transplanted very good, but the turnips not so large in general as the first; the third, although sown on the same day as the others were transplanted, were none of them the size of an egg, which I believe is always the case with late-sown turnips, although the result is difficult to be accounted for.

5. I may, in conclusion, mention another advantage of the transplanting plan—that it is *best* performed in *wet* weather, when all other field labor is at a stand.

#### ON THE APPLICATION OF BONES TO GRASS LANDS, ON LORD COMBERMERE'S ESTATE.

From the London Farmers' Magazine.

Within the last nine years Lord Combermere has supplied his tenantry (upon the Combermere estate in Cheshire) with bones for upwards of 600 statute acres of their pasture land, at a cost of about 10*l.* an acre. The land before the bones were applied was not worth more than from 10*s.* to 15*s.* an acre (rent); it is now well worth from 30*s.* to 40*s.* His lordship charges the tenantry 7 per cent. upon the outlay; they would gladly pay 10 per cent. rather than not have the bones. Old sour turf upon a clay subsoil is the land that answers best to manure with bones, though I have seen them used upon a dry, friable soil and a sandy substratum with success. I have never known them to fail when there is a strong turf, and the land free from water. Upon Lord Combermere's estate bones are not allowed to be put upon land until it has been down in grass at least seven years. In very few instances where land has recently been in tillage have I known bones to answer well. The end of April I consider the best time to apply bones; no stock ought to be put upon the land before the following spring.

If the land is not too poor to produce a crop of hay, I do not object to its being mown the first year, but on no account afterwards. Thirty to 35 cwt. is the quantity used upon a statute acre, according to the quality of the land; or if bought by the bushel, one bushel of bones to a rood of 64 square yards; if the land is very poor, 90 bushels to a statute acre. An imperial bushel of bone dust should weigh from 45 to 47 lbs. if ground fine enough. I prefer them ground to about the size of a walnut. It is now 20 years since I first saw bone dust applied to pasture land, on a field adjoining Lord Combermere's estate. At the time the bones were put on the land, it certainly was not worth more than 10*s.* an acre, and though so long a period has elapsed since the field was manured with bones, it is now worth 35*s.* per acre, though I think the land is not quite so good as it was five years ago. I consider bones the cheapest of all manure for mowing-grounds. Eight years ago, I manured part of one of my mowing fields with bones, 35 cwt. to the acre, the land has produced me a good crop of hay every year since, quite equal to the other part of the field which has been manured with good farm-yard dung every two years. Once in eight or nine years is quite often enough to manure mowing lands with bones; and I am quite certain that pasture land on which bones have been applied never will (so long as it remains in grass) return to the state it was in before the bones were put on. The price I paid for bones last spring, was 2*s.* 8*d.* per bushel; or if by weight, 6*l.* 15*s.* per ton. They are now a little lower; I can purchase them at 2*s.* 6*d.* per bushel, or 6*l.* 6*s.* per ton, that is for the raw bones. The boiled bones are at 4*l.* 15*s.* per ton, but I do not consider them any cheaper than the raw ones, as being wet they weigh much heavier; two tons of boiled bones are not more than equal to 30 cwt. of the raw. I give the preference to the latter, if they can be got pure; but I have not had such long experience as to assert confidently that they are the best as to durability. In the year 1828, one of Lord Combermere's tenants manured five acres of pasture land with boiled bones, and in the same field two acres with raw bones; both answered well, and at this moment I do not observe any difference, both still equally retain their fertilizing qualities. I find a great difficulty in procuring good fresh bones, as the manufacturers buy them up to make size of; old bones (such as the greater part of those are which are imported from Ireland and the continent) will not do for this purpose, and it is my opinion that the fresh bones are not so much deteriorated by boiling, but that they are quite equal as a manure to those we get from the bone-dealers as fine bones, most of which are old, and consequently have lost a great part of their fertilizing powers.

EDWARD HILLYSE.

Haywood Farm, Nantwich, Cheshire.

#### GUANO MANURE.

From the London Farmers' Magazine.

Alfred Castellain, esq., of Liverpool, informed the Council, that having observed a reference made in Professor Sprengel's article, on "Animal Manures," published in the 4th part of the So-

'ciety's Journal, (page 494,) to the cormorant or gull manure occurring in immense quantities on some islands lying off the coast of Peru, termed "goano," and used with the most striking effects in Peru for manuring the maize-fields; he thought it might interest the members of the Society to know that two cargoes were then on the way from Peru to Liverpool, and that their arrival might be expected in the course of six weeks.

#### GREEN CROPS. PLOUGHING WITH COWS.

Extracts from Mr. Valcourt's Criticism on Mr. Blacker's Essay on Green Crops and Stall Feeding thereon (which has been translated into French.)

From the London Farmers' Magazine.

In the essay I have just read with much interest, I find Mr. Blacker has touched the target at the circumference, but not at the centre, point blank; he has only glanced at half the advantages to be derived by the small Irish farmer from the house-feeding of cows. The milk is an advantage; the dung is still greater; but the third—which Mr. Blacker has not mentioned—is the labor, though moderate, which the cow performs when harnessed with a collar—not with a yoke; for two cows, harnessed either abreast or one before the other, will draw his horse-hoe, his harrow, his roller, or dung-cart. A cottier who has only four, or even three acres, will have plenty of fodder for two cows in the stable to do his tillage, and draw his manure, his crop, and his firing. Mr. Blacker will see, in the east and south of France, cows thus harnessed. In the south they are all yoked; but in the east and in my province of Lorraine they have only a collar, which answers much better. It is true that a cow which works constantly eight or nine hours a day, stops giving milk; but, provided she works only from two to four hours a day, and that not every day, and that she is well fed, she will give almost as much milk as if she did not work at all, and she will give more milk after having a day's rest: and a cottier who has only four acres will not have occasion to employ two cows daily. When a pony rests, it does not bring any thing in; whereas, when a cow rests, its milk increases. It has been observed in Lorraine, that cows are more active than oxen; and that, harnessed with collars, they walk as quick as horses. The cottier, when he sees the work two young cows can do when kept well in the stable all the year round, will take care to provide plenty of good nourishment for them both winter and summer; for, when poorly fed, they neither can work well nor give plenty of milk or manure; and a cow, with a suitable saddle, can carry considerable weight—for their legs are short and thick, and their spines strong. But, to feed cows well, the cottier must, as soon as he has a yard of ground vacant, dig it, manure it, and transplant on it (summer or winter) cabbages or other plants, according to the season; and, at the same time, as much care must be taken of the dunghill as of the cow—for manure is the foundation of all productive agriculture in Europe. For this reason the cottier's wife should let nothing be lost which can increase the dunghill. The children of the cottier, so soon as they can

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walk, should be accustomed to carry something to the dunghill; it would be an occupation for them; and they should be praised, and told—"You have worked well; here, my child, is the best potato for you, because you brought enough to bring up four potatoes." And let every child have its own bit of garden. L. VALCOURT.

Paris, Rue Louis-le-Grand, No. 16,  
August, 1840.

#### THE WIRE WORM. BENEFIT OF TRAMPLING WHEAT.

In October, 1836, finding that the wire worm was very fast destroying the wheat plant, and it being drilled, I had it trodden by men, one man treading two ranks at a time firmly into the ground; the expense was 2s. 4d. per acre, and it was quite effectual in stopping the ravages of the wire worm. A week or two after, the wheat in an adjoining field began to show the ravages of the wire worm, and I pursued the same plan with similar success. In February 1839, the wheat in a piece of down land which had been sown late in October, was becoming thinner very fast, the ground being in a very hollow state after the frost, the young backward plant appeared to be losing its hold and dying away; I then sent a number of women to tread it, and I never saw a piece of wheat improve faster than it did after the treading; I had not only a very good crop of corn for the season, but also more straw than in any other piece in my occupation. In the spring of 1840, finding the wheat in the down land losing plant again, in consequence of the cold weather, I tried the same plan, and there was a speedy change for the better in the appearance of the wheat afterwards; the plant continued to flourish, and at present I have a good crop of wheat on land on which I never saw a good crop before. The remarks I have made apply to hill land, although I have no doubt that the spring treading would be found highly beneficial in all soils, when, in consequence of frost or long continued dry weather, the land is in a light pulverized state."—*From the annual report of the South Wills and Warminster Farmers' Club.*

#### THE SCOUR IN CALVES, &c.

From the London Farmers' Magazine.

Observing in this month's number a query, whether any cure can be found for the scour in calves, I may observe that about a year ago I had a valuable calf taken with it, and tried the remedies mentioned by your correspondent—caiecu, laudanum, &c. as I had often done before, but this time without success. In a few days it died. Some weeks after, another, for which I had given six guineas, was taken with the same complaint, and by the advice of an eminent veterinary surgeon who was visiting me, I gave it nothing but small and repeated doses of Epsom and Glauber salts in equal quantities; half an ounce of the two in a little warm water, repeated two or three times a day, according to the violence of

the distemper. It was quickly cured, and I have used it on every occasion since with unvarying success. I am glad of this opportunity of making it public for the benefit of my fellow countrymen who are engaged in breeding cattle. I no longer feel any alarm at a calf being affected with this disease, which almost every weaning calf is, within the first six weeks. I consider the complaint in some degree infectious, and also that too warm a building without sufficient circulation of air tends greatly to produce it. Laudanum, bark, &c., though they stop the disease, frequently kill the patient; the salts, on the contrary, remove the cause of disease without producing costiveness. If any of your readers give it a trial, I doubt not that they will find it as useful a remedy as I have done myself. Respectfully,  
I A.

As I am writing I may observe, in answer to another correspondent, that the white carrot is considered better than the red for milch cows, because not so liable to give any taste to the milk. I should doubt if it were as good for feeding; in product it is generally about double per acre. The seed may be had of any seedsman, who, if he does not keep it, can procure it in London.

#### ON THE AGRICULTURE OF THE NETHERLANDS.

*By the Rev. W. L. Rham, A. M. Vicar of Winkfield, Berks.*

From the Journal of the Royal Agricultural Society of England.

Having been requested by the president and the journal committee to communicate the result of my observations on the present state of agriculture in the Netherlands, I shall endeavor to comprise, in a short essay, those peculiar modes of cultivation which have made that portion of the continent of Europe so superior to the surrounding countries in an agricultural point of view, and which throw considerable light on the true principles of practical husbandry. Some of the details have been laid before the public in the "*Farmer's Series of the Library of Useful Knowledge*," under the title of "*Outlines of Flemish Husbandry*," I shall take the liberty of quoting largely from this little work, which, having been written on the spot, and referring to particular farms, of which the names are given, may be relied upon as giving a correct account of the modes of cultivation, and of the details of the practice generally adopted.

The climate of the Netherlands, from the borders of France to the northern part of Holland, along the coast of the North Sea, and for 50 or 60 miles inland, differs little from that of Kent or Essex, in England. From its geographical position, forming a part of the continent of Europe, it is warmer in summer and colder in winter than the central part of England. The quantity of rain which falls there is not so great, especially in winter, as in those parts of England which lie on the opposite coast; but the snow covers the ground for a much longer time. This causes a material difference in the time of ploughing the land and sowing the seed in spring.

The quality of the soil is various. Towards the northern part of Flanders and Antwerp, and

the southern part of Holland, it is a poor loose sand, almost as barren as that which is found on the sea-shore blown into hillocks and only kept together by the roots of the sea-bent (*arundo arenaria*.) If it were not for a small portion of mud occasionally mixed with this soil, the water would freely percolate through it, and no vegetation could be supported. In proportion to the quantity of the mud, which is a very fine clay with a portion of decayed shells and organic matter, the soil is more or less fertile; and when the mud enters into it in a considerable proportion, it forms a rich compact loam. In many places there are alternate narrow strata of sand and loam, which, being mixed together, form a very productive soil. A small portion of carbonate of lime, produced from the decomposition of sea-shells, is found in the mud, when it is analyzed; but there is no limestone, chalk, or marl, in any portion of this coast.

When the sand is of considerable depth, and little or no loam is found near the surface, it becomes a difficult and tedious process to bring it into a state of productive cultivation. The sandy heaths which lie between Antwerp and the Maese are of the most unpromising kind; and with all the industry of the Flemings and Dutch, a great portion is still in a state of nature, producing nothing but scanty tufts of heath, interspersed with a few very coarse grasses. But even in these barren sands there are many green spots, which have been forced into cultivation. The following passage in the "*Outlines*" is a faithful representation of such improvements:—

"The poor sandy heaths, which have been converted into productive farms, evince the indefatigable industry and perseverance of the Flemings. They seem to want nothing but a space to work upon; whatever be the quality or texture of the soil, in time they will make it produce something. The sand in the Campine can be compared to nothing but the sands on the sea-shore, which they probably were originally. It is highly interesting to follow step by step the progress of improvement. Here you see a cottage and rude cow-shed erected on a spot of the most unpromising aspect. The loose white sand blown into irregular mounds is only kept together by the roots of the heath; a small spot only is levelled and surrounded by a ditch; part of this is covered with young broom, part is planted with potatoes, and perhaps a small patch of diminutive clover may show itself; but there is a heap of dung and compost forming. The urine of the cow is collected in a small tank, or perhaps in a cask sunk in the earth; and this is the nucleus from which, in a few years, a little farm will spread around.

"In another spot more extensive improvements are going on; a wealthy proprietor or lessee is trenching and levelling the surface, sowing broom-seed, and planting young fir-trees, which are to be cut down in a few years. In another, the process has gone on further: the fire or the broom are already cut down; a vein of loam has been found, and is dug out to be spread over the sandy surface; the cart with liquid manure is preparing the surface for the reception of seed, or the same, diluted with water, is poured over the young blade, just appearing above ground. The soil is created, and, if the cost and labor were reckoned, is paid for at a dear rate: but perseverance ensures

success, and there are few instances of improvements being abandoned after they are fairly begun, unless they were undertaken on too large a scale; but then the land is soon divided into smaller portions, and improvements go on from different centres, and with more certainty."—pp. 11, 12.

Trenching and levelling the surface is always the first operation in bringing a barren soil into cultivation. The Flemings and Dutch are very expert in this operation.

"The instrument they use is a light wooden trenching-spade, the end of the blade only being shod with iron; the handle of this spade is about 2 feet long, the blade from 12 to 15 inches. A light pick-axe is used to break the pan where it appears. A ditch is dug with the trenching spade 2 or 3 feet wide, and as deep as the trenching is intended, generally 2 feet, or at least 20 inches; this ditch is filled with the earth which is taken in long thin slices from the edge of the solid side of the ditch. Every slice is distributed carefully, so as to mix the whole, and keep the best soil at top, and likewise to fill up hollows and level eminences. If there is more than can conveniently be spread level, little heaps are made of the superfluous earth, which are afterwards carried in an ingenious manner, to fill up more distant hollows, by means of horses and an instrument which is called a *mollebart*. Wherever there is a pan it is carefully broken, and the loam, which is always found under it, is mixed with the sand dug out. Draining is seldom required here, except that which is effected by making deep ditches to carry off the superfluous rain-water, which, in a country almost as level as a lake is no great difficulty.

"If there is no manure at hand, the only thing that can be sown on poor sand, at first, is broom; this grows in the most barren soils; in three years it is fit to cut, and produces some return in lagots for the bakers and brickmakers. The leaves which have fallen have somewhat enriched the soil, and the fibres of the roots have given a certain degree of compactness. It may now be ploughed and sown with buck-wheat, or even with rye without manure. By the time this is reaped, some manure may have been collected, and a regular course of cropping may begin. As soon as clover and potatoes enable the farmer to keep cows and make manure, the improvement goes on rapidly; in a few years the soil undergoes a complete change; it becomes mellow and retentive of moisture, and enriched by the vegetable matter afforded by the decomposition of the roots of clover and other plants.

"If about 20 small cart-loads of dung can be brought on each acre of the newly trenched ground, the progress is much more rapid. Potatoes are then the first crop, and generally give a good return. The same quantity of dung is required for the next crop which is rye, in which clover is sown in the succeeding spring; and a small portion is sown with carrots, of which they have a white sort, which is very productive and large in good ground, and which even in this poor soil, gives a tolerable supply of food to the cows in winter. Should the clover fail, which sometimes happens, the ground is ploughed in spring, and sown with oats and clover again. But if the clover comes up well amongst the rye stubble, it

is cut twice, after having been dressed with Dutch ashes early in spring. It is mostly consumed in the green state. The clover-lay is manured with 10 cart-loads of dung to the acre, and rye sown again, but not clover. After the rye comes buck-wheat without any manure; then potatoes again, manured as at first, and the same rotation of crops follows. It is found that the poor land gradually improves at each rotation from the quantity of dung used.

"For want of sufficient manure, broom-seed is sometimes sown with the rye after the clover. The rye is reaped, and the broom continues in the ground two years longer. It is then cut for fuel. The green tops are sometimes used for litter for the cows, and thus converted into manure. It is also occasionally ploughed in when young and green, to enrich the land. Oats, clover, and broom, are occasionally sown together. The oats are reaped the first year, the clover and young broom-tops the next, and the broom cut in the third. This is a curious practice, and its advantage appears rather problematical. All these various methods of bringing poor sands into cultivation show that no device is omitted which ingenuity can suggest to supply the want of manure.

"After the land has been gradually brought into a good state, and is cultivated in a regular manner, there appears much less difference between the soils which have been originally good and those which have been made so by labor and industry. At least the crops in both appear more nearly alike at harvest than is the case in soils of different qualities in other countries. This is a great proof of the excellency of the Flemish system; for it shows that the land is in a constant state of improvement, and that the deficiency of the soil is compensated by greater attention to tillage and manuring, especially the latter. The maxim of the Flemish farmer is, that, 'without manure there is no corn; without cattle there is no manure; and without green crops and roots cattle cannot be kept.' Every farmer calculates how much manure he requires for his land every year. If it can be bought at a reasonable rate, he never grudges the outlay. If it cannot be purchased, it must be made on the farm. A portion of land must be devoted to feed stock, which will make sufficient manure for the remainder; for he thinks it better to keep half the farm only in productive crops well manured, than double the amount of acres sown on badly prepared land. Hence also he does not reckon what the value would be of the food given to the cattle if sold in the market, but how much labor it costs him to raise it, and what will be the increase of his crops from the manure collected. The land is never allowed to be idle so long as the season will permit any thing to grow. If it is not stirred by the plough and harrows to clear it of weeds, some useful crop or other is growing in it. Hence the practice of sowing different seeds amongst growing crops, such as clover and carrots, amongst corn or flax; and those which grow rapidly between the reaping of one crop and the sowing of another, such as spurrey or turnips, immediately after the rye is cut, to be taken off before wheat-sowing. These crops seem sometimes scarcely worth the labor of ploughing and sowing; but the ploughing is useful to the next crop, so that the seed and sowing are the only expense; and



while a useful crop is growing, weeds are kept down."—pp. 12, 13, 14.

The process here described is the only one, which, allowing for difference of soil and other circumstances, can bring very poor land into a state of profitable cultivation. In the neighborhood of Aberdeen, in Scotland, on a very different, but still very poor soil, deep trenching with the spade, and judiciously mixing the different earths which are dispersed through the soil, have been found the most efficacious, and, in the end, the cheapest mode of transforming large tracts of peaty moor, full of granite rocks and stones of all sizes, into cultivated fields. The change produced in the aspect of the country is no less striking here, after a few years, than that of the improved heaths of the provinces of Antwerp and Guelderland.

The most rapid improver of loose sands is rich liquid manure, affording immediate nourishment to plants, which otherwise, for want of moisture, would languish, even with an abundance of solid dung; for this last remains altogether inert, until it be moistened and partly dissolved. When the fibres of the root spread, they bind the loose sand, and prevent the too rapid evaporation and percolation of the moisture. These roots remain in the soil when the crop is reaped, and by their decay afford organic matter for the nourishment of the next crop. Hence it is evident that the plants which have long spreading roots, if they can be made to vegetate vigorously by an ample supply of liquid manure, greatly improve very light sands, and, in process of time, by the decay of the vegetable fibres, produce such an increase of humus as entirely to change the quality of the soil.

The collection and preparation of liquid manure is an object of primary importance with the Flemish farmer: every farm has, near or under the stables and cow-houses, one or more capacious tanks, into which the urine of the animals and the washings of the stables flow; and every exertion is made to increase the quantity and improve the quality of the tank liquor.

"The tanks are generally sunk below the level of the ground, and have the sides built of brick, and the bottom paved: they are of various dimensions, according to the number of cows and horses on the farm. Attached to the distilleries, where many beasts are constantly kept to consume the refuse wash, there are very large urine-tanks, of an oblong shape, divided by partitions into different chambers, so that the liquor may be of the proper age when it is used, which some farmers think ought to be six months.\* Each chamber is about 8 feet square and 6 or 8 feet deep: these are sometimes vaulted over, but frequently only covered with loose boards. As urine and the emptyings of privies are sold wholesale and retail, there are many large tanks near the rivers and canals, where the dealers have sometimes great quantities in store. Some of these consist of many square pits like tan-pits, bricked round, and the inside covered with a cement, which prevents loss by filtration. There is generally in a corner of each pit a graduated scale, by which the number of barrels or tons of liquid in the tank may be ascer-

\* But this depends on the season of the year and other circumstances, as will be seen below.

tained, by observing the height of the surface. These tanks are gradually filled by boat-loads brought from the large towns; and when the season arrives for sowing, in spring and autumn, the farmers come with their carts and tubs, and purchase as much as they may want. The price varies from three to five francs (2s. 6d. to 4s.) per hogshead, according to the quality. In a small farm of 30 to 40 acres the tank is generally about 20 feet long, 12 wide, and 6 deep, with a partition in the middle, and arched over, leaving a small round opening for the pump, and another sufficient to allow a man to go in to empty out the earthy deposit which accumulates at the bottom. A trap door shuts over this last aperture to prevent accidents. Sometimes the tank is round like a well, with a dome top and so deep in the ground, that it has a foot or two of earth over it. The situation of the tank is either in the farm-yard near the entrance of the cow-house, or immediately behind it: sometimes it is like a cellar under the building; but this is apt to cause a disagreeable smell in the cow-house. We here describe those tanks which we consider the most convenient: the form and capacity of them vary greatly, according to the means and notions of the proprietors of the farms; but a tank of some kind or other is considered as indispensable an appendage to a farm as a barn or a cow-house. The farmer would as soon think of dispensing with his plough as with his tank: and no expense or trouble is spared to keep it well supplied.

"The numerous towns and villages in Flanders afford great help in the way of manure. The thrifty housewife and her active substitute the maid know the value of what in our households is thrown away, or wasted and lost. A small tank, or a tub sunk in the ground, in some corner, contains all the liquid which can in any way be useful; soap-suds, washings of dishes, &c., are carefully kept in this reservoir until, once a week, the farmer or contractor calls with his tub on a cart; and this, mixed with the contents of privies, which are frequently emptied, he keeps in large cisterns for use or sale.

"But this supply is not always adequate to the wants of the farmer; and then he has recourse to rape-cakes dissolved in water, or in the tank liquor, which is expensive, and can only be profitable when flax bears a good price, this being the crop for which rape-cakes are chiefly used as manure. Every means, therefore, of augmenting the supply of urine is had recourse to, and the most efficacious is the establishment of distilleries. These answer the double purpose of consuming produce and increasing manure by the number of beasts which are fattened on the refuse wash. It is calculated that every beast produces at the rate of 10 or 12 tons of dung and 26 hogsheads of urine in the year. A moderate distillery has 50 or 60 head of cattle constantly stalled. Here then is a supply of manure for several hundred acres of land every year. Formerly there were a great many distilleries in Flanders, but the duty on spirits and the interference of the government has much reduced their number; so that the farmers complain of the loss of this manure, and the consequent deficiency of their crops.

"Liquid manure is carried to the fields in common water-carts, which consist of two wheels

and shafts, carrying a cask containing from 60 to 120 gallons of liquid. The cask has in the under part a hole, 2 or 3 inches in diameter, secured inside by a valve; under this is a board a little slanting, to spread the liquid as it flows out of the cask. A man usually rides on the horse which draws the cart, and holds in his hand a string, which passes through a hole in the cask and opens the valve when required. There is an advantage in riding on the horse, as it does not add to the weight of the load on the wheels, which in light soils would be apt to sink deep. In momentary exertion it assists the horse by the weight on his back; and the heavy Flanders horses are well able to carry a man and draw a light load at the same time. When the cask is empty the horse trots home for another load, and no time is lost. It is astonishing what advantage there is in accustoming horses to trot when they have no load; it actually fatigues them less than the continued sleepy walk. Who would suppose that the Flemish and Dutch farmers surpassed us in activity? but whoever has been in the Netherlands in hay-time or harvest must acknowledge it."—pp. 21, 22, 24.

The value of cows' urine with all other animal substances dissolved in it is universally admitted by all the farmers of sandy soils in the Netherlands: the theory of its preparation and application to the soil remains, however, yet involved in some degree of obscurity; and some eminent chemists have doubted whether the collection of it in a tank is the most economical mode of preparing it for the soil.

In the fourth number of this journal there is a translation of a very valuable Treatise on Animal Manures, by Sprengel, in which (p. 474) it is more than insinuated, that the advantages of the urine-tank are much over-rated; and that it is better to mix the solid and liquid parts of dung together, and form them into composts with rich earth, as is often done in England and other countries, than to preserve the fluid portion by itself in a tank, to be used separately on the land after it has gone through a certain stage of decomposition. Without disputing the correctness of the chemical principles on which this opinion is founded, we may hesitate before we condemn or undervalue a practice which has produced such wonderful effects in the improvement of the poor sands in the Netherlands.

Liquid manure may be applied to plants in every stage of their growth, if it be judiciously diluted, so as not to injure the young and delicate roots by its caustic nature. It invigorates their growth more than we could anticipate from a knowledge of its solid component parts. It is no doubt sooner exhausted; because it is rapidly absorbed by the roots, and its elements enter into new combinations. If some of the more volatile parts, as ammonia, fly off in the process of decomposition which goes on in the tank, it is probable that a much greater portion of these elements fly off from the solid dung, while it remains in the ground and before it is in a fit state to be taken up by the roots, which can only happen when rain renders it liquid. All those who have had long experience of the good effects of liquid manure on light soils persevere in its use, whatever objections may be urged theoretically to its being preserved separately.

On stiff, impervious soils the use of liquid manure may not be so advantageous, and the reasonings of chemists may be correct. On these soils it is seldom used, except when they are in grass, or when cabbages are planted; and composts prepared with straw, earth, and dung, with the liquid portions occasionally poured over them, are found to be a more effectual and lasting manure. The Swiss, whose principal object is to have a supply of food for their cattle in winter, when the mountain pastures are covered with snow, and who devote much of their attention to the cultivation of roots and artificial grasses, use the liquid manure in a very condensed state, collecting the water which has been poured over their heaps of dung, after it has filtered through them and been saturated with all the soluble portions of the dung. This, which they call *lizier*, in French, and *mistwasser*, or *gulle*, in German, is carried on the land immediately after the grass, sainfoin, or lucerne has been mown, and produces a second and third crop in a very short time. Cabbages, potatoes and the varieties of the beet are invigorated in the same manner; and thus, in the short summers of the high mountain valleys, crops are brought to maturity, which, without the use of liquid manure, would never have had time to ripen. But let it not be imagined that either the Flemings or the Swiss undervalue the solid manure which is produced by the mixture of litter with the dung of animals, collected in heaps, where it heats and decomposes. They are as careful of this, and as anxious to increase it, by every means in their power, as the best English farmer can be.

"In order to increase as much as possible the quantity of solid manure, there is in most farms a place for the general reception of every kind of vegetable matter which can be collected; this is a shallow excavation, of a square or oblong form, of which the bottom has a gentle slope towards one end. It is generally lined on three sides with a wall of brick, to keep the earth from falling in; and this wall sometimes rises a foot or more above the level of the ground. In this pit are collected parings of grass sods from the sides of roads and ditches, weeds taken out of the fields or canals, and every kind of refuse from the gardens: all this is occasionally moistened with the washings of the stables, or any other rich liquid; a small portion of dung and urine is added if necessary, and when it has been accumulating for some time it is taken out, a portion of lime is added, and the whole is well mixed together; thus it forms the beginning of a heap, which rises gradually, and in due time gives a very good supply of rich, vegetable mould or compost, well adapted to every purpose to which manure is applied."—p. 22.

It will be seen hereafter that, in the preparation of the land for the different crops, the Flemings and Dutch do not use less solid manure than we do, and that the liquid is an additional means of producing a certain and abundant crop, and not merely a substitute for the dung heap.

The great secret in the improvement of poor land is to increase its fertility by judiciously stirring, pulverizing, and mixing together the different earths of which it may be composed; adding those which are deficient—where it can be done without too great expense of labor or capital—and, above all, impregnating it throughout with

portions of humus, that is, organic matter in a state of decomposition.

The mechanical texture of the soil is of the first importance; for on this depends the proper retention of moisture, without superabundance or stagnation, which implies that the subsoil is naturally porous, or made so artificially; especially in northern climates, where the evaporation is slow, and much rain falls throughout the year.

The roots of plants, in their tender state, must find pores in which they can shoot and increase in bulk, for which the air and water are indispensable. They must also find substances which can yield them carbon, in a soluble state, as carbonic acid, which is produced in all vegetable fermentation. In water and air are contained all the other elements of vegetables, and even carbon in a small proportion. If the pores are so large as to let the moisture through, or allow it to evaporate readily, the vegetation ceases, and the plant soon dies: if they are filled with water, so as to exclude air, the same result follows. Hence it is evident that by altering the mechanical texture of a soil, without any chemical change in its component parts, it may be made much more capable of supporting vegetation than it was before. The quantity of organic matter, or humus, which will sustain vegetable life is extremely small, when other circumstances are favorable. Hence in the improvement of barren soils the most essential process is to alter the mechanical texture. In clays this is effected by repeated tillage, when the situation allows the superfluous moisture to run off. This is the reason why good clays are in all countries looked upon as the best soils, and sands as comparatively inferior. A soil which contains but little argillaceous or calcareous earth in its composition was long considered as irreclaimably barren: but when the alternative presents itself of starving, or making poor sands productive, means are soon found to correct their barrenness.

As pure silicious sand is too porous, the first thing is to add substances which will readily fill up some of the pores. Fine clay diffused through water does so most effectually; and it is astonishing how small a portion of pure alumina will consolidate a loose sand, and convert it into a good loam, the parts of which, when moistened, will adhere and form a clod in drying. Whenever this is the case, the soil can no longer be considered as barren; but it may not yet be fertile, however its porosity may be corrected; for this purpose it requires organic matter already so far decomposed as to be readily assimilated to the substance of the plants. When vegetation is active, and the organs of plants vigorous, there is every reason to suppose that water is decomposed by the action of the leaves; but this does not take place in the infancy of the plant. The roots must find some nourishment, ready prepared and easily assimilated. This has a strict analogy with animal life. The infant finds its earliest nourishment in its mother's milk, or, by the admirable contrivance of nature, in some similar substance. The body of a young chicken is formed from the white of the egg in which it was enclosed; and the yolk is a provision for the period which intervenes between its being hatched and the time when its little bill is so hardened as to enable it to peck and take up insects or

small seed. The seed committed to the ground may be compared to an egg: the first expansion of the embryo is entirely from the substance of the seed; and, until the seed-leaves are fully formed, it takes little or nothing from the soil, except pure water. But after the real leaves expand, it requires more nourishment, and if this is not found in the pores of the soil, or if the roots cannot penetrate to it, the plant languishes and dies. It is of no use that plenty of rich manure is somewhere in the soil, if it be not accessible or not in a proper state to be absorbed by the tender fibres of the roots. The plant will die, as an animal would by the side of a chest full of provisions, which are locked up, or unfit for his organs of digestion. These principles lead naturally to the best practice in improving or cultivating the soil; and we shall find that the mode pursued by the Flemings admirably accords with the theory.

The trenching and mixing prepares the soil for receiving the additions of organic matter. The roots are fed with a liquid manure readily taken up, and greatly invigorating, until a sufficient portion of humus is formed, which gives the most gradual and regular supply of nourishment. At the same time solid particles are deposited which fill some of the pores, and begin that accumulation of humus which in time will convert the whole into a rich and fertile soil.

It must be observed, that the smaller the particles of sand the better the soil will be after being improved. Coarse sand, each particle of which is a visible crystal, allows the humus to be readily washed out. It must be mixed with clay or marl to fill up some of its pores; and if this is not already done by nature, it must be done by art, or all the labor bestowed on the cultivation, and all the manure expended, will never be repaid by the produce. It is, therefore, of the greatest consequence to all improvers of barren lands to know, not only what proportion of silicious and argillaceous earths there is in the soil, but also what is the actual size of the particles. This is very easily ascertained by means of the simple instrument, consisting of metallic sieves, which is described in the *Essay on the Analysis of Soils*, in the first number of this Journal. When a considerable proportion of the dry pulverized earth passes through the finest sieve, it is a sure sign that the soil, if not already fertile, can be easily made so. That which is most readily improved consists of a small portion of coarse sand, mixed with a large portion of finer, and with a considerable portion of impalpable earth, partly silicious and partly argillaceous and calcareous, so that, when it is moistened, it does not form a tough paste, but dries into clods easily pulverized between the fingers. The degree of fertility will depend altogether on the quantity of humus which is incorporated with this loam, and which the specific gravity readily discovers; the richer soils being the lightest; for humus is much lighter than any of the simple earths.

Keeping this in view, it is easy to show the advantage or disadvantage of different modes of proceeding, which should vary with the nature of the original soil. In the natural earth, which has never been cultivated, or which is dug up from a considerable depth below the surface, portions of different kinds of earth are found in thin layers or in separate pieces, which, being pulverized and mixed together, want nothing but the addition of

humus to make them a fertile soil. Here the use of the trenching-spade is evident. No other instrument could so well divide the earths, and mix them in due proportions. The more the ground is stirred, the better it becomes; and by a course of cultivation, which, instead of exhausting the humus gradually increases its quantity, it becomes at last a rich mould, like that of a garden, in which all plants suited to the climate thrive luxuriantly. In the progress to this state of fertility the soil must have passed through every intermediate state; and the same process which at any one period effected the improvement must be judicious, if applied to any soil similar in its nature. In agriculture, as well as in most arts and sciences, to stand still is the prelude to going back. The soil, under the hands of a skilful agriculturist must not only be made to produce all that it is capable of producing, but its capacity for production must be continually increasing, until it arrives at that state, when a further increase of humus would loosen its texture too much to produce many of the most valuable plants, which are the chief objects of cultivation; for, beyond a certain proportion, the increase of humus does not always increase the produce.

These preliminary observations appear necessary to enable those who may not have paid much attention to the theory of vegetation to trace their accordance with the practice which experience and observation alone have suggested and confirmed. They may also be useful in suggesting to those who would imitate any particular system of husbandry the modifications which are necessary, where the soil, climate, and other circumstances are different.

The advantages of stirring the soil to a considerable depth by trenching and deep ploughing, which only now begin to be generally appreciated in England, and the intimate union of the manure with every portion of the soil, have long been practically acknowledged by the farmers in the Netherlands. The quality and value of flax, of all their crops the most profitable, has been found by experience to depend chiefly on the care with which the soil is loosened, and the manure intimately incorporated with it. Great attention is paid to ploughing and cross ploughing. The harrows are used much more frequently than with us, and the surface is laid level and thoroughly pulverized to receive the seed. The stitches, where there are any, are not generally in a convex form, but have a flat surface; and the spade deepens the intervals to twice the depth of a common furrow. The earth dug out is spread evenly over the seed which has been previously sown, and is pulverized by the harrows or by a flat instrument called a *traineau*, which is drawn over it, and breaks all the clods, while it compresses and levels the surface.

The rounded form of the stitches in England throws the water into the interfurrows, but at the same time tends to soak the lower portions on each side in wet, if the subsoil is at all retentive of moisture; hence the plants which grow there are often sickly and unproductive. In Flanders, even in the most tenacious soils, this rounded form is unnecessary; for there is an open drain between every two stitches. The soil, having been well pulverized, allows the superfluous water to sink, and it runs slowly into the deepened furrows

without injuring the plants at the edge of the stitch. When the crop is reaped, the edges of the stitch are broken down and drawn into the deepened furrow by means of a large hoe or hack, and the plough completes the filling up and lays the land level again. When next the stitches are made, care is taken that the intervals are a foot to one side or other of the lines where they were before, and again dug out eight or nine inches below the bottom of the furrows. Thus in a few years the whole field will have been dug 16 or 18 inches deep, and the soil and subsoil, to that depth, completely incorporated and enriched with manure; for, after the seed is sown, the tank liquor is invariably poured over the surface, or into the intervals before they are deepened, that it may soak in and mix with the earth which is about to be spread over the seed. Although this is a longer process than that of trenching the whole ground with the spade at once, it is much more effectual and less expensive. About an inch only of the subsoil, whatever be its nature—if it be not an indurated clay or gault, as it is in many places in England, but nowhere in the Netherlands—is put on the surface to cover the seed. It produces no weeds, and being soaked with liquid manure, and exposed to the action of the atmosphere for many months, it is mellowed and assimilated to the soil before it is ploughed in. An inch of earth thus improved every year, and mixed with the soil, soon renders the whole of a uniform quality to the depth of 16 or 18 inches; after which every subsequent spreading tends to increase the uniformity in texture and richness.

Some plants do not require a great depth of soil, their roots spreading near the surface. In this case the manure is ploughed in with a shallow furrow, and none of it is buried below the reach of the roots. But the most profitable crops, such as clover, wheat, cole, and especially flax, thrive best in a deep soil: the roots of this last will strike down several feet into the ground, if it meets with a very mellow soil; and the crop will not only be more abundant, but of a better quality, than it would in a soil, however rich, which had but little depth. Potatoes also, which are cultivated to a considerable extent in every farm, thrive better in a deep soil of moderate quality, than they do in a richer soil of small depth on a barren subsoil.

Another mode of deepening the soil and mellowing it at the same time is worthy of notice. When the harvest is over, the land is immediately ploughed, and, where laborers are to be found in sufficient numbers, several are stationed, with spades in their hands, at regular distances along the line of ploughing. The plough makes a furrow about 10 inches wide and six deep. As soon as it has passed the first man, he begins to take solid splits of earth out of the bottom of the furrow and places them on the land to the right side. These splits are not taken in continuation, but with a small interval between them, leaving so many square holes. The number of laborers is proportioned to the length of the furrow, so that each shall have finished his portion by the time the next furrow is made, which fills up the holes in the preceding furrow; and the whole field is laid in an extremely rough state; thus it remains for a considerable time, sometimes all the winter, and the rain and frost pulverize the clods

which lie all over it. In spring the whole is repeatedly harrowed to make it level, and is then ploughed flat, or in stitches to prepare for sowing, the manuring being a matter of course. This will give some idea of the importance attached to deepening and mixing the soil, and will account for the uniform appearance of the crops on soils of very different qualities. The worst soils require more labor and manure, and consequently are less valuable; but every deficiency is made up by additional industry. But it may be asked, where can a farmer find manure, solid and liquid, to manure nearly all his land every year? for of all the crops cultivated buckwheat is the only one which is sown without some manure, at least by all good farmers. This is the great point to which the attention of the farmer is constantly directed. The collecting and preparing of manure is a profession of itself. The poor in towns sweep the streets and make composts of all refuse matter in some spot given to them for that purpose without the gates. They reduce it to a fine powder, and dry it in the sun. What will chemists say to this? Will not all the volatile parts fly off, and the best portions of the manure be lost? We will not pretend to give an answer to this objection: but the fact is, that this dry manure is most highly prized by the growers of flax, and is supposed more efficacious than any other, night-soil excepted. This last is the *ne plus ultra* of manure for light soils. It is conveyed in boats from the different towns, and deposited in pits, where it is collected and kept for sale by measure. In a very dense population this resource is considerable, and no one would be so wasteful as to allow the common sewers to carry off a substance which is regularly sold and obtains a good price.

These are adventitious resources, and can only be depended on in certain localities. The only certain means of obtaining manure is by feeding cattle, which in the Netherlands are chiefly milch cows. No meadows are required in the light lands of Flanders for the cattle to graze in: and where there are meadows along the banks of the rivers, they are mown to feed the cows with grass in the stalls, or to make hay for winter fodder. The whole system of husbandry is founded on the supply of manure, and a considerable portion of the crops are merely subservient to this purpose. The immediate profit on the cattle is trifling, if they do not even cost more to feed than their produce will repay: but the manure must be had; and he who can procure manure at the least cost is the best farmer. Keeping this in view, all the cattle are kept in stables, that none of the manure may be lost; and every mode of feeding has been tried which will increase the manure at the cheapest rate. Meadows being scarce, and hay dear in those parts of the Netherlands where the soil is sandy, the chief food of cows in summer is grass, barley or oats, cut in a green state, clover, tares, and spurrey; and in winter cabbages, beans, and roots. These last are not given in their natural state, but soaked in warm water, or boiled into a mess, which is given milk-warm to the cows in troughs; so that it may be truly said, that the cows are fed like pigs. The straw is used chiefly as litter for the horses. The cows often lie on smooth bricks, which are washed clean twice a day, for which

purpose a pump is an essential appendage to a cow-house. There is generally a deep gutter along the wall behind the cows, into which the water and urine drain, the ground sloping gently towards it. The tank is either immediately under the stable, well vaulted over, or it is so near that all the liquid readily runs into it through a covered drain. The heads of the cows are towards the middle of the stable, and their tails over the gutter along the wall. The width of the building admits of two rows of cows, facing each other, with a space between them sufficiently wide to admit a small cart to bring the food to them. This is universally the form of a cow-house in Holland. The liquid in the tank is allowed to go through the first stages of fermentation, during which the caustic portion of the urine is rendered mild, and the liquor is better adapted to be taken up by the fibres of the roots. In order that there may be a regular succession of liquid, in a proper state for use, there are partitions in the tanks, and, by means of small flood-gates in the drain which leads to it, the fresh accumulation may be directed to any one of the pits thus formed, while the ripe liquor may be pumped up into tubs or barrels set on wheels, to be conveyed to the land. There are means of accelerating or retarding the fermentation, according to the time when the liquor is wanted. Stirring and admitting the air assist the process, while the addition of earth, peat, or ashes, and keeping out the air, retard it. The efficacy of the liquid is much increased by adding oil-cake, the residue of rapeseed when the oil has been pressed out, and other vegetable substances. This is usually done a short time before it is put on the land, as it would otherwise ferment too much.

We have already mentioned the compost-heaps. These are chiefly made of the dung and litter of the horses and pigs, kept moderately moist, and mixed with every kind of refuse vegetable matter, with the addition of mould from ditches and the soda taken from open drains in pastures. This is generally put on the land in an active state of fermentation, and immediately ploughed in; sometimes the small heaps laid out of the carts at regular distances in the field are moistened with liquid manure, to excite a fresh action; and, as soon as they begin to heat, the dung is spread and ploughed in. It would appear from this, that it has been found to decay more rapidly in the earth, when put in hot, than when the fermentation is already subdued, which might be anticipated in the sandy soils.

#### "BEST TIME FOR CUTTING TIMBER."

For the Farmers' Register.

An article from the New Genesee Farmer, under the above caption, lately republished in the Farmers' Register, contains some valuable suggestions. I believe, with the writer, that the summer is the best time for cutting timber, but not that every part of the summer is equally good. Early in the season the flow of sap is so abundant, that its retention in the pores of the wood during the act of seasoning is liable to produce fermentation, and consequently premature decay.

It is a well known fact, that in the month of

August there is a short time when the circulation is nearly inactive. It is during the interval between the summer and fall growth. The bark no longer runs any more than in winter; and the sap, instead of being thin and watery as in the preceding months, becomes concentrated and viscid. I consider this period as the best time of the whole year for cutting timber. It usually occurs from the 15th to the 20th of the month, a few days earlier or later according to circumstances; and continues only for a very short time. Close observation is necessary to ascertain it with exactness. The proper rule is, when the bark ceases to run.

I have frequently had timber cut in August for farming purposes. Such as gate posts and other things much exposed to the action of the weather, and I can testify that there is a compactness and solidity in it when it becomes dried, which I have never observed in wood cut at other seasons. My own experience does not extend farther back than ten or twelve years; but I have known several cases of remarkable durability, when the timber has been cut according to the old Dutch rule, *in the dark of the moon in August*; which is as near the time indicated as any person relying on lunar influences could approximate to it. Every third year it might coincide with it almost exactly.

The period mentioned may also be used by farmers to very great advantage, in destroying a number of pests. The simple belting of a tree will then so effectually destroy life, that not a sprout will afterwards put up from the stump or roots. It is the only time at which I ever even partially succeeded in subduing the shrub called "round cap" (*Cephalanthus*) which greatly infests our meadows and flat grounds; and which usually grows from the smallest portion of root. I had warred against it for years to no effect, until at last, by a single operation in August, I totally eradicated it. The sassafras, elder, locust and other woody plants growing freely from the roots, and the bramble likewise, might no doubt be effectually extirpated with the same facility, and the same period might be selected with equal propriety for shrubbing new grounds.

T. S. P.

#### ON IRRIGATION.

*To the National Institution for the promotion of science.*

*From the Southern Agriculturist.*

*Washington, April 2d, 1841.*

Since the brief statement of the advantages of irrigation appeared in my discourse delivered before the institution in January last, I have received so many applications for information on the manner of watering land, that I am induced to believe a more extended notice of the subject may be acceptable and useful.\*

\*The discourse referred to above, described a system of practical irrigation, with illustrations, much of the same general character as was given in a former volume of the *Farmers' Register*, and on a much more extended scale, from the work of Stephens on *Draining and Irrigation*—ED. F. R.

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The numerous and abundant rivers, streams and brooks which traverse our country in every direction, afford great facilities for irrigating the soil, and thousands of acres of barren land might thereby be rendered as productive as any in the United States.

The thin soils, which drain and dry easily, profit most by the use of water, and are the least productive without it. The gravelly, sandy land of Chile produces by irrigation upwards of thirty bushels of wheat to the acre, and the poor lands in the neighborhood of Mexico are made equally productive by this process. The great advantage, however, to be derived from the free use of water is not so much in the increase of grain, as in that of grass crops. A water meadow attached to a farm gives the farmer an abundance of manure for that portion of his land which he keeps in tillage; for he may convert into dung the whole of the hay it produces, while it requires nothing in return but watering.

In the Carolinas and Georgia the low lands bordering on the rivers are irrigated as high up as the influence of the tide extends for the cultivation of rice. The water is admitted into ditches parallel and perpendicular to the river, and thence distributed by feeders over the whole surface so as to drown the land, by opening the sluices when the tide is rising; and after keeping it there as long as is deemed necessary, it is let off at low tide. This method might be practised with great advantage on all the tide-water rivers throughout our country where the banks are low enough to admit the water at high tide. Flat lands that have not the advantage of tide water are the most difficult to irrigate successfully, for it is essential that when the water is let off, the land should be drained perfectly dry; otherwise it will produce coarse grass of inferior quality. Lands that have a gentle slope, even steep hill side, are better adapted for irrigation, as they admit of the water flowing over them without covering the top of the plants, thus giving them the advantage of air and moisture. A gentle current is considered more advantageous than stagnant water, and the land thus situated will always drain dry when the water ceases to flow. On level land it is necessary to conduct the drain so far that it may enter the river low enough to ensure a sufficient fall to dry the land.

Where the stream is rapid and the fall great, it is not necessary to construct any dam; but simply to tap the river high enough up to lead the water along the highest part of the field; but where the current is sluggish the water must be raised by a dam erected at the point where it is to be used.

There are two methods of watering lands. The one by dividing the field into regular beds, and the other by what is called *catch work*, which is resorted to where the form of the ground is irregular. It varies therefore with the circumstances of the land it is proposed to water; but the conductors, feeders and drains must be laid out so as to profit by the natural movements of the soil both to water and to drain it.

The first thing to be done by the farmer who desires to irrigate his fields, is to take an accurate level of the ground he intends to water, so as to compare the highest part of it with the height of the water to be used. The surface of the water

must be eight, twelve or twenty inches higher than that of the land, according to the distance of one, two or three hundred yards from the one to the other. The main conductor is then to be cut from that point as straight as it can be, to lead to and continue along the highest side of the field. If the land has any swells on its surface higher than the rest, it will be necessary to give to each of them its own conductor, with feeders branching from it, to convey the water over that portion of the field. The width of the conductors must depend upon the quantity of water they are required to convey; and be deep enough to receive the muddiest portion of the stream; for although the land will profit by being covered with clear water, it is more enriched by the deposit of turbid streams. Each conductor is to be provided with a sluice to regulate the admission of the water. In case the river does not run in such a direction as to allow the water, after flowing the land, to be discharged directly into it, a main drain must be cut along the lower part of the meadow to receive the surplus water and convey it into the river. This should be of the same dimensions as the principal conductor. The portion of meadow to be watered by each conductor is next to be divided into beds from thirty to fifty feet wide, the feeders, which branch at right angles from the conductor, running along the centre of them, except where the ground falls two ways, when it may be necessary to make the feeders nearer to one drain than the other. A bed two hundred yards long will require a feeder where it leaves the conductor to be twenty inches wide, and gradually diminishing in width to twelve inches at the extremity. A drain is to be made between every two feeders, and parallel to them, of the same dimensions, but reversed form; the upper part being ten or twelve inches, and the drain gradually widening to twenty inches, where it terminates either in the main or in the river. Supposing these works finished and ready to go into operation, the manager opens the sluice to admit the water into the conductor where he adjusts the stops in such a manner as to supply the feeders. He next regulates the stops in the first feeder, so that the water shall flow regularly over its sides from one end to the other. He then repeats this process in the second feeder, and so on until all the feeders are adjusted. The stops may be of pieces of board or of turf pinned down, if necessary, taking care to keep the heads of the pegs below the surface of the water, otherwise they are apt to collect weeds and trash.

The rule in Europe is to flow the land throughout the months of October, November, December and January, letting the water run ten or fifteen days at a time, and keeping the land perfectly dry during the intervals. This can only be done in situations where it is not liable to freeze hard; for a sheet of ice forming over the soil would injure it. In February it is recommended to water in the evening and let the water off early in the morning; this practice is continued through March and April, the water during that period being never kept on the land more than two or three days at a time. From the first week in May the land is left dry until the grass is cut and the hay harvest is over, when it may be watered again for a short time, to secure an abundant after grass, that may be fed off.

The profits arising from irrigation are so great

that they will justify a considerable outlay. The works, therefore, ought to be well and durably constructed; the dams and sluices of the best materials, and able to resist the sudden rising of the water. The beds which, as already stated, are to be from thirty to fifty feet wide, should be raised from one foot to fourteen inches in the centre, so that the water will fall gently off from the feeders which run along their summits to the drains.

Where an old and well set meadow is to be watered, it is advisable to lift the turf and level and prepare the subsoil, relaying the turf after the beds are made. This process of lifting the turf and relaying it after ploughing and manuring the subsoil of old grass lands is practised in the best agricultural districts in Europe with great advantage, even when it is not intended to prepare them for irrigation; but only to invigorate the growth of the grasses. If, when the works are completed, the soil is to be ploughed up and levelled, it will require two or three years before it will be sufficiently set in grass to allow its being watered without working.

I have endeavored to give such a description of the process of irrigation as will at least enable a farmer to judge of the practicability of watering any portion of his land, if not to execute the work himself. Those who seek for further information on this important subject, may consult the works of Boswell, Wright, Smith and Johnston, Loudon's *Encyclopedia of Agriculture*, and Stephens' *Practical Irrigator*. The construction of works for irrigation belongs, however, to the civil engineer, and it is to be hoped that those of the United States will turn their attention to the subject. Our extensive lines of canals may, for the most part, be converted into conductors, and the water be beneficially used to fructify the country through which they pass. If a blessing awaits the man who makes two blades of grass grow where only one grew before, the irrigator will be thrice blest; for well watered land will produce at least three times as much grass as the same quality of soil under dry culture.

J. R. POINSETT.

#### SKETCHES OF NORMANDY.

Extract from the *Quarterly Journal of Agriculture* for June, 1841.

This most interesting portion of France differs extremely from the southern and eastern parts in the general appearance of the country, as well as in the details of its rural economy.

Instead of exhibiting extensive tracts of tillage, without any visible subdivisions to mark out the different ownerships, and without trees, excepting the formally trimmed ones upon the roadside, Normandy is a continued series of well-timbered farms, and beautiful forests of surpassing beauty, interspersed with corn-fields of small extent, orchards, and meadow or grazing land.

The admirer of rural beauty is astonished at the aspect of this vast province, if his eye has been previously familiarized only with the open country in other parts of France, where, though his judgment approves of the economical principle which leads him to lament the absence of hedges and trees of every description, he is fatigued with the uniformity of appearance presented to



him, and desires the relief of a varied landscape, such as Normandy exhibits.

The quality of soil varies much, but is on the whole of fine quality,—the richest in France—and in many parts it is highly calcareous.

The farms may be said to average sixteen English acres in extent, and when let they are generally held under leases of nine years certain, and if, at the termination of this period, they should change occupants, agrarian outrages are never the result.

But one-half of the farms is held by the proprietors, who sometimes rent adjoining land; and these proprietors are, in the majority of instances, poor farmers of the lowest class, taking their own produce to market, disposing of it in person, and living as poor as it is possible to imagine.

Many of this class, like the common laborers, dine upon a few apples or pears and a bit of bread without the formality of sitting down to a table, and are content with a drink of their own home-made miserablicider.

It is not easy for an Englishman to conceive how men can work hard upon the washy diet which is so general in France. We have seen men cutting up wood for fuel (which is hard work) from morning to night, and in the severest winter season, without more nutritious food than indifferent fruit and a little bread; the soup taken perhaps for supper at home, or for early breakfast, is, if possible, worse as a means of support, for it consists merely of cabbage and hot water, with a little grease or kitchen stuff; it distends the stomach with wind, and therefore is totally unsuited to a working man, who should have solid, not liquid diet.

The consolidation of farms, and consequent good farming, cannot be anticipated in France; for though an individual here and there may add "field to field," the laws of property render it probable that his farm will be subdivided again in the next generation. These laws, by rendering property divisible *ad infinitum*, and annihilating the privileges of primogeniture, destroy aristocracy in its most essential principles, create a vast number of petty proprietors, with very contracted resources, and—supposing them to let, not cultivate their allotments—take away all chances of having an independent thriving tenantry, under a liberal and encouraging landlord, who identifies his own interests with those of his tenant, and can afford to place him in a really comfortable position.

If our great and munificent land-owners had been encumbered with these restrictions, which gradually reduce ownership, and give rise to the paltry system of higgling for rents, which so much distinguished the class of Squireens in Ireland, and in Scotland too, where would be the splendid improvements and creations of valuable property, with all the consequent train of industry and independence to thousands, which have been effected by the individual efforts and accumulated wealth of some of our aristocracy?

The effect of the principle of equal partition of property, so pleasing to the ears of unreflecting people who have had no opportunities of seeing the practical consequences, must ever be an insurmountable bar to the acquisition of perfect skill in the operations of husbandry in France; small farms can never admit of the purchase of

expensive implements, nor of speculative improvements, and no parent there has the power of leaving his property in land (he may divide his money as he likes, but not by testamentary act,) otherwise than equally among his children, male and female, with the privilege only of giving one-fifth more to a particular child; and this depends on the number of children which he may have.

Where would be the means of building those excellent farm-establishments which we have through the length and breadth of our land, and of draining thousands of acres in a very expensive, but permanent manner, through the combined powers of the proprietor and the tenant, where the means for conducting those expensive operations on the soil, which we constantly witness, if the laws of primogeniture did not prevail among us?

What has been stated applies more generally to France; we must now confine our observations to the circumstances of Normandy.

Though there are many sheep kept in this division of France, we cannot properly assert that it is of a pastoral character; there is little or no free range for sheep, they are kept in very small lots of three, four, or half a dozen, and usually tied together by the legs even when they have lambs, which, though an economical plan as regards the quantity of produce consumed, checks the condition of these animals considerably. Occasionally they have a comparatively free range, but rarely, and altogether a worse description of sheep cannot be imagined.

The introduction of the Leicester breed would be a great boon in Normandy, where there is much rich land, and where the enclosures render this breed more desirable than that of South Downs, or any other breed requiring a good range. The foot-rot is frequent among the Norman sheep, and this would be another circumstance against the breed of South Downs, which are so liable to it.

The average price of mutton is 3½d. per lb. in the markets, and the only kind fit for table is the year old; the purchaser who ventures upon aged mutton will generally find that it is extremely tough; frequently, without of course intending it, he finds that he has brought home part of an old ram which he cannot chew nor digest.

The management of cows is not a great deal better, yet the cream and butter, which are prime in quality, and abundant in quantity, even in the midst of winter, when frost and snow pervade the land, put us entirely to shame. Instead of having a few thin slices of well salted butter at the breakfast or tea table, as is so general in this country, through the winter season, the markets of Normandy, as well as those of the more southern parts of France, afford ample supplies of the most delicious fresh butter imaginable, at less than half the London price.

In great farms the practice is to churn twice a week in summer, and it is much owing to the shortness of interval during which the cream (and this only is put into the churn) is allowed to stand, that the butter is so well flavored. Dairy cows may be said to yield eight quarts of milk daily during two-thirds of the year, and twelve quarts during the remaining four months.

Beet, in some departments, is given pretty freely in winter, but the use of this vegetable for cattle feeding is very partial and limited, for though it



increases the tendency to milk, it is not so favorable to its excellence of quality as grass, if the season will, admit of grazing, or sainfoin hay, which many people consider more economical and productive of prime butter than any other food in winter. Nor is this excellence effected by any artificial feeding, unless hay be considered such, for, except very *partially*, beet-root is not cultivated for cattle, and potatoes and turnips are never given to those cows which yield this fine butter.

At a numerously attended meeting of land-proprietors and farmers at Bayeux, M. de Chaumont submitted to them a number of questions respecting dairy management; the following is a digest of the answers returned to some of the inquiries.

The application of dung imparts in *spring-time* valuable qualities to dairy pasturage, but the grasses in summer give, on dunged land, a rank flavor to butter.

Dairy-houses should have a northern aspect even in winter, when they require warmth, as a south wind is prejudicial to milk, and all offensive smells should be avoided. Cream should not be left in the milk-room on account of the influence which the fermenting milk has upon it, and also because the fire, so necessary for the milk in cold weather, is injurious to butter. The floor should be flagged, and washed in summer to preserve coolness. Some are opposed to washing; we should say that the French dairy-maids are all so, for cleanliness is not among their virtues, but for what reason we have not ascertained.

The milk when taken from the cow, is poured into a strainer, by turning it upside down into pails, and care is taken in winter that it cools as little as possible before it is changed from the one vessel to the other, while in summer the object is to let it become cool before it is thus poured out into the pans.

These should be fresh and well scoured, and often put into boiling water for about half an hour, and dried in the sun or at a fire. It is considered that the nature of the milk in earthen vessels has a decided effect on the formation of cream, but as to their shape there does not appear to be any remarkable influence. Cylindrical earthen vessels are preferred, or those shaped like an inverted cone, flattened at the bottom, and of considerable depth. Porcelain has been tried, but not found so good as the common earthen ware.

The cream is skimmed twice a-day generally, sometimes three times, and care is always taken not to leave it too long on the milk. Twenty-four hours (sometimes forty-eight) in summer elapse before the first creaming, and the cream is allowed to lie as short a time as possible before churning.

By day the cows are turned out, and at night they are supplied with hay, often of sainfoin, which is admirable for dairy purposes.

The breed is very varied and nondescript; the Alderney blood seems very common, especially in the part of Normandy adjacent to Brittany; yet the people of this latter province deny that any importation of cows from Alderney, Jersey, or Guernsey to the Main is ever made. The parent stock, however, was indisputably identical.

Lord Morpeth, a fine Durham bull, of which there is a portrait in the Journal of the Association of Normandy, was imported with "Gaudy," a cow of the same breed, to the Hara in 1838.

There is a heavy coarse breed also, admirably suited to the plough and cart, which, if crossed judiciously with the Ayrshire, would produce a breed with the tendency to fatten, which is much wanted in the Norman stock. Stall-feeding is not understood, and it is rarely the case that a carcass of really fat beef is to be seen.

Bullocks are much used. Four or five of these generally accompany three or two horses in the teams, which, though composed of so many individual animals, and, in our judgment, injudiciously yoked, are possibly well adapted to the deep-rutted and precipitous lanes through which they have frequently to pass.

The system of rearing and fattening calves differs much in the departments of the north of France. At Bessin, for instance, all heifer calves are usually reared, and the bulls fattened, for the market, to which they are taken when two months old. In that department they are fed on skim-milk only. At Caumont they are fatted on new milk, because in that district the butter is of inferior quality, and value, and flavor, and even bread, converted into a kind of pap, is sometimes added to the new milk to accelerate the fattening, which is considered sufficiently attained at the age of six weeks. This veal averages 120 lbs. a quarter, and is sold at 8½d. per lb.

The swine is of the worst possible description as to form; but the pork in flavor is very good, and the English, who cure their own bacon and hams, find the meat firm, and in every respect good.

#### ON THE USE OF LIME AS MANURE. (G.)

From the Southern Agriculturist.

*Mr. Editor:*—It is unfortunately a trait in the character of the southern planter that he regards all novelties with suspicion. Any departure from the practice of his fathers, or his neighborhood, he considers dangerous, and the generality will deride as vain theory, the efforts of the man who will have the courage to make an innovation upon established precedents, or to violate a rule dictated by one of the patriarchs of a neighborhood.

This cautious spirit, if united to a liberal enterprise, is highly commendable; he who possesses it will incur no rash risks, while he will avail himself of all the lights of modern research; but unfortunately we too generally find the caution without the enterprise. The sneer of the practical man withers the energy of the enthusiastic speculator, and the old routine of practice continues to be popular because nothing short of absolute demonstration will convince the man of practice that the theorist is not a madman.

In your editorial career you have suffered from this prevailing spirit. The practical man will not write, because he has nothing new to communicate. His practice is the same now as it was yesterday, and as he thinks it will be to-morrow, and is known to all engaged in the same pursuit. The speculator dare not write, because he knows that the first question which will be asked when his essay shall have been read, will be—What sort of planter is he? How does his practice square with his theory? Is he a practical man? If the answer to this question be not satisfactory,

he will be condemned as one who presumptuously pretends to teach, while he ought yet to be sitting at the feet of Gamaliel. "He writes better than he plants." If a more damatory specimen of saint praise were ever uttered, I have not had the misfortune to hear it. My imagination can conceive of nothing more killing.

I am surprised that the planters of lower Carolina have as yet derived no benefit from the publication of one of the most valuable and practical essays of the age, (I mean Mr. Ruffin's *Essay on Calcareous Manures*.) Several years have elapsed since its first publication, and notwithstanding the knowledge that it has revolutionized agriculture in lower Virginia, I believe that hitherto not one planter in South-Carolina has used lime but as a petty and useless experiment.

The book came out, too, at a period when South-Carolina was suffering severely from the emigration of her citizens. Exhausted fields, lying over large beds of lime, were deserted, in some instances they were literally abandoned, and at best they were sold as lands hopelessly worn out, and their proprietors went to the great western valley to seek richer lands, a main feature in the constitution of which was the presence of lime. Notwithstanding the known character of Mr. Ruffin for intelligence and probity; notwithstanding the labored details of experiments which teach the reader that he has got among stubborn facts, and not idle theories; notwithstanding that it is a history of what has been effected in lower Virginia, a territory differing but little in character and climate from our own, yet the book which unfolds its beneficial agency is with us almost unknown; the lime remains in its natural bed undisturbed; its very existence is by many questioned, and the fields lying but a few feet above it, and which with its application can be put in a state of progressive improvement, are undergoing yearly a progressive deterioration.

The extent of the lime-stone [or marl] region in South-Carolina is as yet unknown. There is every reason to believe that it commences immediately below the falls of the great rivers, and continues to the sea. The stratum varies considerably in thickness. I apprehend that its maximum thickness is at or near its termination in the uplands, and that its minimum is at or near the sea coast. It is certainly much thicker at the Eutaw Springs than in the known localities twenty miles below.

The position of the lime is various. At the Eutaw Springs and in its vicinity, in the neighborhood of McCord's Ferry and near Monk's Corner, on Cooper river, it frequently rises to the surface and a little above it. On the elevated lands bordering on the various swamps and creeks which form the head of the latter river, it has been found as low as from ten to twenty feet below the surface. On the margins of creeks, and near the point of junction of upland and swamp land, its depth below the surface is but a few inches, and generally, except where the land rises abruptly to a considerable elevation, it may always be found at the depth of from four to eight feet.

If I might presume to propose a general rule from my limited observation, I would suggest

the following as the indication of a bed of lime, viz:—whenever the upland adjacent to a stream of water produces a growth of hickory, red oak, dogwood, locust or walnut, lime may be dug for with a certainty of success; when, on the contrary, the uplands produce only long leaf pines and scrub-oak, the search for lime will be unavailing. The streams of the former class abound in muscle shells and craw-fish, and the uplands in snails; none of them, certainly not the muscle, will be found in the pine land streams.

The appearance of the lime varies in different localities, but the fragments which have been subjected to analysis, exhibit generally about ninety per cent. of alkaline earth,—how large a portion of this is magnesia, is a question not yet settled by the chemists. In some places near Santee river, below the Eutaw, and at Godfrey's ferry on the Pee Dee, the lime is found in a bed of loose shells partially pulverized, and may be carried immediately from the pit to the field, without further preparation. It is generally a hard rock full of fossil-shells; frequently the rock is so hard that when smartly struck with a hammer scintillation will follow. This of course will require either fire or the hammer to render it fit for the field. If a quantity of this hard stone is thrown up in the fall, and exposed throughout the winter months, it undergoes disintegration (b.)

I have no correct data for ascertaining the amount of labor necessary for obtaining lime. Mr. Ruffin, who has been in the habit of spreading from three hundred to seven hundred bushels of calcareous earth to the acre, (equal to from one hundred to two hundred and thirty bushels of Carolina lime,) states that a single man, employed throughout the year, will dig enough to manure sixty acres of land. Two years ago, six men in three weeks dug for me eighteen hundred bushels—this was equivalent to the labor of one man for nine weeks or fifty-four days. With this amount of lime I manured eighteen acres of land. I believe that my hundred bushels of lime are fully equal in value to Mr. Ruffin's three hundred bushels of calcareous earth. Now as it required the labor of three days to manure one acre, if we take an average number of two hundred and seventy days as the number of working days in the year, then the labor of one man would at that rate of manuring furnish enough lime to cover ninety acres of land. If the relative values of the Carolina and Virginia manures have been justly stated, we may presume that the value of the products of labor will be greater in Carolina than in Virginia, because it is to be supposed that when the liming is pursued as a systematic part of the operations of the farm, the means employed in procuring it must be more convenient than any I could command, when only engaged in a crude experiment.

Following the practice universally adopted in Carolina, viz:—to devote our attention to the market crops almost exclusively, considering every other as a secondary object, my experiments with lime have been made only on cotton. I have made two experiments; the first in 1839, a year remarkable for dryness and great productiveness; the second in 1840, a year as remarkable for humidity and comparative failure. In each year the result was most gratifying; the most decidedly marked success was in the dry year. After one

year's cultivation the land was suffered to rest. The field limed in 1839 produced a less abundant crop of poverty grass than the circumjacent lands not limed—and a more luxuriant growth of crab and joint grass. The field of 1840 is now at rest.

I am aware that our planters will not consider the improvement of the joint grass a desirable object. That is a grass that is said to delight in a calcareous soil, and it might spread more rapidly on such, than on lands free from calcareous earth. Every one who owns an old plantation, is aware that joint grass is no stranger, even to the poorest lands. If lime then be really a fertilizing agent, let us not object to it because it does not prove a panacea for all the evils with which our ignorance, or our carelessness, or the behests of a wise Providence have strewn our path.

Mr. Ruffin observes, that they who wish to use calcareous manures must make the digging of it a branch of the regular farming operations. Any system of manuring, we know must, to be efficient, become a part of the habitual operations of the plantation. Trusting to the chance of obtaining lime during the season between hoeing and harvesting, I made no other provision for it last year, but classed it with the rest of that miscellaneous jobbing operation called fall work. But in the fall the water had taken possession of my pits, and I had land to clear, and other causes prevented me from obtaining a bushel of lime. The opening of a small body of land, together with the rains of August and September, have stopped for this year my course of experiments. How frequently do we hear the opening of lands alleged in excuse of neglect in many operations essential to good husbandry. It excuses the want of manure, the inefficiency of ditches, the insecurity of fences, the delapidated state of the plantation buildings, and the wants of many comforts, which as enlightened citizens and men of substantial wealth, we should not want.

I am no enemy either in theory or in practice to the clearing of our forests—but I think the time has come when it should be done with great caution. Our upland forests of prime quality are nearly exhausted. They are our only resources in the country for good fuel, an article which in some vicinities has become frightfully scarce. Unless necessity therefore should compel, or strongly advise their destruction, they should I think be husbanded as a resource of wealth and comfort at no distant period. The system pursued by our predecessors was, to clear a piece of land and cultivate it to death. It was then suffered to recover some strength and throw up another growth of trees, while other forest lands were subjected to the same system of exhausting cultivation. In the course of time the new forests were again reduced to cultivation and again exhausted, but in a much shorter period than at first.

A system of resting then followed. After a long period farmers began to apply manure, and now commenced a system that promised really to give to the planter the character of a cultivator of the soil. Now we may look for improvements that shall be permanent, and it is to aid in perfecting this system that I have felt it my duty to contribute my humble efforts, by saying a word or two in favor of lime.

Many a planter who would shrink from the

appalling labor of liming his land, will not hesitate, if it is convenient, to clear land, even though it may not be necessary. Let us estimate the labor necessary to prepare for cultivation a field of ten acres, by two methods of clearing, and of liming.

Let us suppose first a piece of prime upland to be cleared, then the labor account will stand as follows:—

1st. Underwooding—to each acre		
8 hands, equal to	- -	80 days work.
2d. Felling and cutting up trees,		
8 hands, equal to	- -	80 " "
3d. Log rolling, firing, &c.: to		
each acre 2 hands,	- -	20 " "
4th. Listing: to each acre 8		
hands,	- -	80 " "
5th. Bedding: to each acre 8		
hands,	- -	80 " "
		<hr/>
		340 " "

To obtain this field then, requires an expenditure of three hundred and forty days of labor. No account has been taken of the labor of women and children engaged in raking, firing, &c., nor of the labor necessary for ditching, fencing, &c. During the first year of cultivation the usual task of half an acre cannot be performed, and even in the labor of preparation for the second crop, short tasks are necessarily given. This field will endure constant cultivation for five or six years. After that period it will require rest and manure. The first crop, it must be observed, is always an uncertain one. A prudent speculator will never make a large calculation on the issue of a crop sown on fresh lands. Let us now suppose an exhausted field to be brought into cultivation with the aid of lime.

I have already stated that it required the labor of three days to procure lime enough for one acre of land, at the rate of a hundred bushels per acre. Thirty days' labor will then be required to manure ten acres at the same rate. Suppose the quantity doubled and two hundred bushels be applied—here then will be required the labor of sixty days. Add an equal number of days for burning, hauling and spreading, and the lime will be on the ground at the cost of one hundred and twenty days' labor. Deduct this amount from three hundred and forty, the time required for the preparation of forest lands and there will be a balance of two hundred and twenty days left to devote to any other preparation of the land you may deem advisable. The lime once spread, the labor is over; full tasks become the order of the day; and the planter may rest with the assurance of all who have given the lime a fair trial, that he has put on his land a manure whose beneficial agency time, so far from destroying, will continually develope.

It is a common opinion, that clover will not endure the hot sun of South Carolina. This opinion is not more prevalent with us now than a similar opinion respecting the adaptation of the climate of lower Virginia to clover was a few years since in that state. Since the introduction of the use of calcareous manures the cultivation of clover has become universal in lower Virginia. (c.) It is evident, therefore, that it was the want of something in the soil, and not the warmth of the sun's rays, that was at fault in

Virginia. I have for three or four years past been watching a little experiment which induces me to believe that it is not the sun, but the soil of Carolina, which is fatal to the growth of clover.

A few years since I received from a friend several varieties of grass seeds which I planted in my garden on the borders, immediately under the walls. At the commencement of summer I had a promising crop, but in autumn it was all dead. The following winter I observed a single plant of clover growing on the north border. To this plant I applied lime liberally. It flourished during winter, and in May proved to be red clover. The following winter the clover was still there. It had spread. Lime was again applied. It has continued to improve, and bids fair to overrun my garden.

Now this I admit is a very small experiment to base a large hypothesis upon—but it is not on that account the less valuable. Here is a single plant which has survived the first summer, observed during the winter, small and sickly, treated with lime, the manure which all farmers have declared to be indispensable to clover, thriving under the treatment, bearing with equal success the heats of '38, the droughts of '39, and the rains of '40. It must be observed too, that if the sun is injurious to clover, the position of this plant has been a most unfortunate one. Placed on the south side of a wall it is never shaded but by the very early and late suns of our longest days, and in addition to the direct rays of the sun, it is exposed to all the heat radiated from the wall.

I do not despair of seeing lime in general use in the limestone regions of South Carolina. Improvements of all sorts are slowly adopted by agriculturists. In consequence of the great absence of planters from their estates, they adopt new methods more slowly than any others who derive their subsistence from the soil. A few years since it was a mooted question at every parish club in the low country, whether the profits arising from manuring our fields were great enough to authorize the expenditure of the labor necessary to collect the manure. Nor was there wanting many who even doubted whether it was of any use at all.

It seems never to have entered into the minds of such persons that the highest attribute of man is his capacity for improvement to an indefinite degree, not only of himself, but of every thing committed to his government, and that he never so completely fulfils his destiny as when exercising this capacity; that Providence has deprived us of an Eden in order that we might, by aspiring after its possession, exhibit the greatness of our intellectual resources in their most beneficial aspect; that to impair the value of that which he has given us to use and transmit to our successors, is disobedience and a wanton abuse of his goodness. Such reflections have come home to us when contrasting our declining condition with the present prosperity of others, who in a more richly gifted region are following the destructive example of our fathers. Animal and vegetable manures have forced themselves into general use, and I have no doubt that in a few years we shall see the powerful agency of the mineral manures exercising the happiest influence over the destiny of this state.

A SPECULATOR.

*Note.*—I have carefully abstained from any hypothesis respecting the *modus operandi* of lime. Mr. Ruffin is disposed to regard it as valuable, chiefly as a corrector of acidity. (*d.*) That it has other valuable qualities is highly probable. It has made me good cotton when the land immediately adjacent produced absolutely nothing but a few scattered and half grown stocks.

Respecting the composition of our lime-stone, I have seen two statements differing widely. Dr. Johnson finds about thirty per cent. of magnesia. Mr. Shepard finds little or none, and this difference too in specimens from the same locality. (*e.*) Viewed as a corrector of acidity, the magnesia is perhaps as valuable as the lime, and the value of the manure would not be less in consequence of the presence of so much magnesia. Writers on agriculture have always represented magnesian earths as unfruitful, and ungrateful. This may be true, but it does not follow that a small quantity of magnesia added to the soil may not be advantageous to it. A soil overcharged with lime, would be as poor as one overcharged with magnesia.

Apart from the *mechanical* agency of lime on soil, I apprehend that its value is not greater than would be that of any other alkali. I have seen twenty bushels of ashes produce results quite as satisfactory as a hundred bushels of mild lime. (*f.*) Whether it exercises an agency for any length of time, I have not the means of ascertaining, but as an auxiliary manure to the growing crop, I consider it so valuable, that I have all the ashes on the plantation carefully husbanded. A small reward offered to the negroes induces them not only to save their ashes, but (I have had reason to believe,) to burn more wood for the purpose. Any one who has not tried the experiment would be surprised to find how much may be collected by holding out an inducement.

(*a.*) We shall not affect to disguise the gratification which we have derived from reading this article, caused by the writer's high and grateful appreciation of our individual labors in this important department; as well as from his testimony that the seeds of this improvement, which we have for years been trying to plant in South Carolina, have at last struck root, and now promise good and speedy fruits. The good work has been at last begun by a few planters, of whom the writer of the above article seems to promise to be among the most zealous and efficient. We have however to regret, that, by his withholding his name, and its authority, he has been content to be counted but as a "Speculator," instead of a practical operator and unquestionable witness of facts. We earnestly urge him to persevere—and while he may be the first in South Carolina to reap large profits and increase his wealth from this source, he will exhibit such evidences, that his example will soon be followed by hundreds of his countrymen.—ED. F. R.

(b.) All the marls sent to us from South Carolina for examination were very rich; and in chemical constitution and texture might be deemed rather a soft lime-stone or impure chalk, than *marl*, such as is common in lower Virginia. The last sentence above shows that exposure to frost will serve to reduce the lumps, so that the great cost of burning to quick-lime may be avoided; and there is no use in burning, except to reduce the earth or stone to powder.—ED. F. R.

(c.) This expression covers too much ground. It should be limited, first, to the *marled* lands, as clover will not grow except where calcareous matter, in quantity sufficient for the purpose, has been given, either by the bounty of nature, or by the industry of man. But further, many persons have marled who sow clover to but little extent, notwithstanding its known value after marling; and thus they lose half the benefit to be derived from this mode of improvement. If the writer of the foregoing article, or even any of his most incredulous countrymen, were to visit the marled lands of lower Virginia, all would be fully convinced of the great profit of the fullest extension of the same practice at home. But we are sorry to have to confess, that they would also see, and in the greater number of cases, abundant evidences of neglect to draw full benefit from this great source of riches.

If the legislature of South Carolina, or the different agricultural societies of that state, would depute a dozen of the intelligent planters of their marl region to visit some of the most judiciously marled lands in Virginia, and to report thereupon, we venture to assert that such visits and reports would produce many thousands of dollars of net profit in the course of a few years. The later and permanent annual profits of South Carolina, from this source, and which will and *must* be secured at some future time, should be estimated not by *thousands*, but in *millions*.—ED. F. R.

(d.) The effect of calcareous manure, in neutralizing the poisonous acid of soil is immediate, and most manifest and striking, and the first that affords profit. But a far more important operation of calcareous manure, though later, slower and more gradual, is that by which it combines with and fixes vegetable manure, and productiveness, in the soil, and to which effect there is no limit short of the greatest possible degree of productive power of the best lands under the same climate, exposure, &c.—ED. F. R.

(e.) We have found no magnesia in such specimens of South Carolina marl as we have examined for that purpose, and much question the

existence of magnesia, in quantity worth consideration, if at all, in any of these marls. Dr. Joseph Johnson, of Charleston, was the first person who announced what was to us a novel and remarkable fact, that magnesia existed, and in large proportions in many of these marls. We sought for it in vain, in such specimens as were within our reach. Afterwards we learned from Dr. Johnson that he had been mistaken in that respect, by some error in his mode of analysis.—ED. F. R.

(f.) Wood ashes (after being deprived of their potash, which is itself a valuable manure) consist principally of carbonate of lime and of phosphate of lime. The former is precisely the same as the main and (usually) only valuable ingredient of marl, but in a minutely divided, and therefore much more immediately active state. The phosphate of lime is what forms the earthy or solid material of bones—the great value of which as manure is well known to all well informed agriculturists. Therefore it is plain enough why ashes, whether leached or not, should act admirably well as manure on lands deficient in alkaline ingredients, and in fertility.—ED. F. R.

#### THE PORK BUSINESS AT CINCINNATI.

From the Cultivator.

During the past season 150,000 hogs have been cut up here, averaging 210 lbs., making 31,500,000 lbs. pork; employing in this and the branches of packing, smoking, &c., 1220 hands, and a large capital. The season of '38 and '9 was still larger, 210,000 head were then cut up, averaging 175 lbs. Pork then bore a high price, and the farmers were more eager to get it to market than at present, when it sells so low. I will now state the capacity of one house for this business. 25,000 hogs have been cut up in a single season, 1500 of which can be done in one day, with fifty hands, averaging 200 lbs. wt.—800,000 lbs. can be smoked at one time, or 4,000,000 lbs. in a single season. The season for killing and packing is short, only about ten weeks.

As to the color of hogs, the packers are totally indifferent to it, a black or a spotted, a blue or white is all alike to them, nor does it make any difference with the purchaser or consumer. I hope, therefore, to hear no more objections to the color of Berkshires; it is never thought of here at the west. Now to the weight, and upon this point I was very minute and particular. If the side pork is reasonably thick, say four or five inches, they do not wish the animal to weigh over 250 to 300 lbs., for with such hogs the shoulders and hams are *small and tender*, easily saturated with salt and smoked, and bring the highest market prices. Indeed, the best prices that they fetch is in the Virginia market, and then they only want a 200 lb. hog. Animals that weigh 450 to

500 lbs. are long and thin here, and do not cut any thicker side pieces than those of a proper conformation, that only weigh 250 lbs., then the hams and shoulders of the large animals are *coarse and thick, difficult to salt and smoke*, and do not bear so high a price in market by half a cent per pound as the smaller and more delicate hams and shoulders. I wish to call the particular attention of the pork raiser to these facts. It will be seen now that the very smallest sizes of the fine Berkshires can easily go in weight over the desideratum of the pork purchasers and packers of the west. The live weight of the least Berkshire sow I ever had in good breeding order, weighed on the scales alive 303 lbs., and could easily fat to dress net 350 lbs., and cut at least 4 to 5 inches thick of side pork, which makes heavy mess pork enough for even the Boston market to supply to its fishermen, and give tender, lean, juicy hams and shoulders with very small bones, and a trifling per cent. of offal. Now what more can the public want than this? But urged on by a spirit of pride, and for the sake of bragging about sizes, they seem determined to sacrifice to this folly the finest race of the swine kind that ever existed. My breeders now run from 350 to 600 lbs., in good store order, and would fat from 400 to 700 lbs., double the weight required by purchasers at the greatest pork mart in the Union, and still the cry is for size, size! Well, size they shall have now to their hearts' content, for it is my intention to import some Berkshires this season, that will *fat, full grown, to one thousand pounds*. They can be had in England just as easily as a finer medium-sized race, and I am determined, for one, that the voracious appetite of the public shall be satisfied, in this particular, to the full. At the same time to please myself and the more judicious number of my purchasers, I shall still continue to breed good medium sizes of about 400 lbs. weight, and we shall see at last who is right.

THE SALVING OF SHEEP, WITH A VIEW TO  
THE PROTECTION OF THE ANIMAL WITH-  
OUT THE DETERIORATION OF THE FLEECE.

By Mr. R. Boyd, Innerleithen.

[Twenty Sovereigns.]

From the Prize Essay of the Highland Agricultural Society.

From the material improvements which have taken place in the woollen manufactures of Scotland within the last ten or fifteen years, no wool but that considered of sufficient purity for the manufacture of *white* goods, and, at the same time, calculated to receive the finest tints of color, can with impunity be used in the manufacture of the various descriptions of goods now generally produced by the manufactures of this country, consequently wool smeared with tar and butter is now little sought after. From the increasing demand for white wool, many of the store farmers allowed their flocks, even in high and exposed situations, to winter without a salving of any description whatever. This neglect, however, except in some very peculiar situations, can seldom be continued with impunity above a year or two, as under it both the quantity and quality of the

wool invariably fall off, and it rarely fails to produce a *kempy* fleece, that is one intermixed with dead white hairs, which are found, when submitted to the dyeing process, to assume a different tint from the rest of the fleece, and of much less permanency of color. For this reason, wool so treated can only be applied to an inferior purpose, because it has suffered deterioration. It is, therefore, not possible to maintain, in health and vigor, sheep which are exposed to the vicissitudes of weather in elevated districts, without the application of some salve to protect not only the health of the animal, but to increase and improve the growth of the wool, possessing properties anxiously desired by the manufacturers.

Of late years various salves have been recommended and adopted, and the one now most approved of, if we may judge from its general adoption in the Lothians, in Peebles, Selkirk, Roxburgh, and Berwick Shires, is a composition of powdered, crude, white arsenic, and black soap, in the proportion of one pound of arsenic to six and three-quarters or eight pounds of soap, with an addition of butter or oil, in such proportions as the judgment of those who have the management of the stock may approve, and this quantity with water is considered sufficient for the salving of a hundred sheep. This description of salve was first introduced into the county of Peebles in 1833, by Mr. Murray of Kedmoor, near Peebles, and the Messrs. Oliver, of Williamslee, in the parish of Innerleithen. Although Williamslee is one of the most elevated and stormy situations in the county, the result was highly satisfactory. Mr. Thomas Ketchen, late tenant of Huthope, which marches with the farm of Williamslee, mentioned to me, that the portion of his stock which was salved with the new salve, stood the severity of the winters of 1836 and 1837 much better than those smeared with tar and butter; and, in corroboration of this effect, I may mention, that the shepherd of Kirkstead (which is situated on the north banks of St. Mary's Lake) assured me of a similar result in 1837; and, moreover, that the crop of lambs was fully one-third more than those produced by the ewes smeared in the old way. These facts can be attested by Mr. Ballantyne of Holylee, to whom the stock belongs.

It is worthy of remark, that the stock on the farm of Blackhouse, on the estate of Traquair, amounting to upwards of a hundred scores, were for a number of years much infested with vermin of various descriptions, but in particular with lice. Heavy smearing with tar and butter, and every other means which ingenuity could devise, were resorted to, but without effect. In 1836 the farm was let to the present tenant, Mr. Salton, who with confidence salved the most infective part of his flock, and the result was in every respect highly satisfactory. On the farm of Hindlee, which is of great extent, and occupies an elevated situation in the county of Roxburgh, the stock, when in the possession of Mr. Davidson, who smeared with tar and butter, were subject to great mortality, but Mr. Scott, who succeeded Mr. Davidson on the farm, tried the new salve, and thereby reduced the annual loss to a mere fractional part of what it was.

Notwithstanding the facts here enumerated in favor of this new salve, on account of its containing nothing of an adhesive nature, and from the

number of sheds or openings made in the fleece in laying it on, and which rarely close again during the winter, the sheep are very liable to be chilled by frosty winds, and thereby contract serious diseases. Water in the head is thus induced, as first pointed out by the Ettrick Shepherd in the Farmers' Magazine of 1812. This complaint is most common after a windy and sleety winter; and it is most destructive on farms that are ill sheltered; and attacks most virulently the sheep during the first year, when the wool naturally separates along the back, leaving it exposed to the wet and cold.

As a remedy to this evil, Mr. Ballantyne of Holytes has salved his whole flock, amounting to 160 scores for the last three years, with the following composition or salve, viz.:

$\frac{1}{2}$ lb. crude white arsenic at 7d.	
per lb., - - - - -	£0 0 5 $\frac{1}{2}$
28 lbs. butter at 9s. 6d. per stone	
of 22 lbs. or 5 $\frac{1}{2}$ d. per lb., - - - - -	0 12 3
5 lbs. black soap at 4d. per lb., - - - - -	0 1 8
10 lbs. rough turpentine at 1 $\frac{1}{2}$ d.	
per lb., - - - - -	0 1 5 $\frac{1}{2}$
	£. 0 15 9 $\frac{1}{2}$

with 30 pints of water it forms a salve for 100 sheep, which cost something less than 1 $\frac{1}{2}$ d. per head. The water being heated serves the purpose of keeping the salve in a liquid state during the time it is applied to the sheep; and too much attention cannot be bestowed on constantly stirring the mixture, as the arsenic is apt to fall to the bottom; and no less attention ought to be paid to the spreading of the salve in an even manner, as in the event of any part of the body being neglected, the severity of the attacks of the insects will be felt in proportion to their limited range on the skin, which soon becomes encrusted with scabs on the neglected spots. The only difference between this salve now used by Mr. Ballantyne, and that which was introduced into this country in 1833, is the rough turpentine, which from its adhesive nature, not only tends to close the sheds which were made in the fleece, but assists the wool to retain possession of the salve during its growth. It is found admirably adapted for repelling external moisture, preventing cutaneous diseases, and killing instantly all the insects with which sheep are infested. And I have found, upon the strictest examination, that the sheep produce a more copious supply of yolk or wool-grease from being salved with this mixture than with any other; and by whatever means sheep are improved in condition, there will always be a corresponding increase of the fleece, which, when produced of sufficient length for combing purposes, will readily sell for one-eighth more per stone than that which can only be used in the manufacture of woollen cloth or hosiery yarn; and it will, moreover, be found upon trial to weigh at least an eighth part more, thus making a difference of one-fourth in favor of the wool produced from Cheviot sheep, which have thus been salved. It is a well-known fact to shepherds, that a successful lambing time very much depends upon the condition of the ewe, and that among hill-sheep the ewes are much more kindly to their lambs, when themselves are in good condition and have plenty of milk, than when in low condition and unable to

nurse them. Besides, so effective is this salve, that it prevents the inclination which sheep have in general for rubbing against foggy or grassy banks, whereby the wool becomes impregnated with impurities, which are not unfrequently found in wool to so great an extent, that the labor of picking it sufficiently clean adds much to its price, and even after all, the manufacturer is obliged to use it to an inferior purpose; and it is, moreover, not an unfrequent occurrence, that even when the wool has been carefully looked over by the most accustomed hand and discerning eye, previous to its manufacture, many of these impurities make their appearance in the finished article.

Sheep, when so salved, are seldom or never found to die of falling "*awald*" or "*awkward*," that is, on their backs; and the wool never peels or falls off previous to clipping.

Wool which has been thus salved is well adapted for mixing with skin-wool which has been removed from the pelt by the application of lime. Skin-wool, when manufactured by itself, is extremely liable to become discolored during the hot days of summer, immediately after the process of oiling has been performed. A very slight admixture of the salve-wool with it, acts as a complete security against its discoloration. In scouring, too, the quantity of soap required is considerably less after the salve. When sheep have not been salved, or been simply bathed, or so insufficiently smeared as to be alternately wet and dry, it not unfrequently happens that the wool has a brown decayed tinge at the extremities of the staple, which, upon the slightest pressure between the finger and thumb, crumbles away. Wool in this state is extremely liable to "*shell*" during a storm, that is, to adhere to large pieces of frozen snow, and also to be frozen to the ground, from which they cannot be relieved without a considerable loss of wool. Wool in this state possesses in but a small degree the *felting* or *milling* properties, so that it is impossible for a manufacturer to make with it a cloth to suit the present fashion, and at the same time to have a sufficient texture to support a proper finish. Cloth made from wool in this state, although it appears tolerably firm after the milling process has been accomplished, is unable to resist the card or tease which instantly destroys the felting property, and reduces it to a mere flannel. By a judicious admixture of salved wool with unalaid or skin wool, the felting property of the unalaid is considerably increased, and consequently a less quantity of it is required to produce a given length of cloth than when manufactured wholly from unalaid wool. It is thereby evident that salved wool is superior for woollen cloth, or for any description of goods for which wool can be used.

Wool which has been so heavily smeared, or so imperfectly washed that it cannot be submitted to the process of manufacture until being previously scoured, incurs an additional expense to its prime cost of not less than 2s. per stone. The most simple method of scouring wool is with hot water and a fourth part of stale urine. The ammonia or volatile alkali which exists in the urine, combines with the oil of the wool, and forms a soap, which, being soluble in water, is dissolved and carried off. This process of itself does not incur any thing like an expense of 2s. a stone; but, when the labor of drying, and picking the

impurities from the wool which collected in the drying, and the extra quantity of oil which is required in the preparation of the wool for the machinery, amounting to two or three Scotch pints for every twelve stones, as also its forming ultimately an article of much less value, than that which is manufactured from the wool as shorn from the sheep's back—when all these circumstances are taken into account, it will be readily admitted that an expense of 2s. a stone may be easily incurred.

Until the year 1832 or 1833, the practice of salving Leicester sheep was scarcely known in Scotland. Since that period a number of farmers who have Leicester and half-bred sheep, have been induced, by the favorable effects of this new salve upon the Cheviot and blackfaced sheep, to make trial of it, and they have found essential benefit to arise from it in protecting the health of the animal, and producing a marked improvement in the wool. Mr. Johnston of Halltree, parish of Stow, who keeps a half-bred stock, was among the first who introduced this mode of salving into that part of the country, and his clip of wool brought, in 1833, 42s. per stone. Mr. Cockburn of Sisterpath, near Dunse, who has a considerable flock of Leicester sheep, salves with this salve; and Messrs. Barff and Son (extensive wool-staplers in Wakefield,) speak of Mr. Cockburn's wool in the highest terms of commendation.

The washing of sheep seems less understood in this country than any other department connected with the management of stock. Some years ago I spent a few weeks in the Highlands of Pennsylvania with Dr. Rose of Silver Lake, a great enthusiast in the management of stock. For many years Dr. Rose has kept upwards of five or six thousand sheep of various descriptions, principally for the purpose of lending out in shares. During my stay at Silver Lake I had the pleasure of paying a visit to Messrs. Hogg, nephews of the Eurick Shepherd, who farm extensively in shares with Dr. Rose, to examine their method of washing sheep. In place of washing them in a running stream, as is generally done in this country, they had a pond constructed of a size corresponding to the extent of their flocks, which was filled with water from the adjoining creek. At the commencement of the operation, several scores of the sheep were carefully hand-washed, immediately after which the water in the pond had the appearance of a lake of soap-suds. The remainder of the flock, amounting to upwards of forty score, were compelled to swim across the pond, and during their passage were twice dipped over head and ears by two of the shepherds who were placed at proper distances. On account of the fleeces appearing of a dusky color, I suggested to the Messrs. Hogg the propriety of swimming them across a pool of clear water, which was immediately adopted, and in consequence the dusky color disappeared. It was quite evident that the sheep which were last washed in the pond were the whitest. Hill sheep after being washed should be driven to a clean pasture-field, and there remain for five or six days to allow the return of the natural yolk into the wool, which is found better adapted for the various purposes of manufacture, than wool clipped before the yolk has filled up its pores.

In the management of the fleece, too much care cannot be bestowed to exclude all impurities in rolling it up, which ought to be done in as firm a manner as possible, but without stretching the fibre.

#### AGRICULTURAL LEGISLATION.

From the Kentucky Farmer.

We deem the present a most fortunate conjuncture in which to direct the attention of our readers to the subject of that improvement in the affairs of agriculture which may be promoted by the action of the people in their organized capacity—by state legislation. The country has passed through a fierce political conflict, during the rage of which no subject could engage attention but such as was inevitably whirled into the political Maelstrom; but having now, as we trust, laid down our partizan arms, it becomes us seriously to consider of and act upon those great measures of policy, relating to our permanent interests and happiness, which have been too long neglected. We can come to the labor now with minds fitted for the accomplishment of our great ends. No new and exciting contest is immediately ahead of us to distract our sober thoughts and hurry us into strife and madness. We are all brethren in interest and feeling, when we come to think of promoting agricultural improvement. On this subject, party cannot divide us. We are one—unalterably, inseparably one. The party politician, with polluted and polluting loot, has not invaded this hallowed ground. It is too sacred for his tread and he dare not approach it. It is too extended for his narrow ken, too comprehensive for his feeble grasp, too weighty for his puny strength. Let us then, throwing away the partizan and resuming our proper character of genuine political economists, meet and labor together as we should, in sincere and earnest harmony, for the promotion of this greatest of our country's interests.

What then shall we do? What ought to be done? By what means, by what instrumentality shall we still further promote agricultural improvement? These are grave questions worthy of deliberate consideration. We have repeatedly offered our individual views upon the necessity of legislative action in aid of the agricultural interests. The more we have reflected upon the subject, the more we have regarded the experience which every day brings forth, the more we have weighed the relations existing between the various classes of interests and pursuits of the country, the more we have earnestly looked into the necessary means of establishing and perpetuating the solid prosperity of the people who rule this great republic; by so much the more are we confirmed in the faith that, so far as the distinctive claims of agriculture are to be regarded, the legislation of the country must be effectively and thoroughly reformed. We have not time or room here to go into elaborate reasoning on this subject; but if kind Providence spare our life, we propose ere long discussing the tendencies of existing systems of legislation and presenting in connexion what we deem demanded by the permanent interests and substantial glory of the country. We shall have some things to say which may not accord with some of the popular



notions of the day : but we shall speak fully and fearlessly whatever we deem it becomes the dignity of an independent freeman to utter.

For the present, then, we declare our solemn conviction that the legislation which is not based upon the idea of benefiting the agricultural interest, which does not substantially regard it as it really is, as the basis of all solid prosperity, is a legislation of deceit and fraud, the tendencies of which are to deprive agricultural labor of its just rewards to bestow favors on subordinate pursuits. Such a system of legislation ought to be arrested if there be any thing substantial in the doctrine of the right either of numbers or property, or both conjoined, to govern.

That we have had, as yet, no legislation looking directly to the promotion of agriculture, is a truth as well known as it is mortifying and painful to confess. That legislation may be wisely directed to the effective promotion of agriculture, is a fact which has been most conclusively demonstrated in the experience of every civilized nation on the globe but our own. That the failure to legislate for the radical improvement of agriculture in this country, is as much at war with the spirit of our political institutions as injurious to our diversified interests, is a truth which is undeniable and which ought to be illustrated in the political action of the people—the political masters of the government. That the farmers—the great and substantial majority of the people—ought to reform *their* political action, is a question which we think can be demonstrated fully ; and could they only be aroused to a proper consideration of their political dignity and rights, all the needed reformation would be speedily wrought. We shall labor these points in the course of our discussions. Meantime, we will here state some of the measures which, for the benefit of the important practical interests of the whole state, we think should be put in operation by a wise course of legislation :

The periodical collection and publication of our entire productions and consumptions, distinguishing the imports and exports from the mass.

A survey of the natural resources of the state, by a corps of scientific and practical men, in the departments of Geology, Mineralogy, Chemistry, Botany, Zoology and Agriculture.

The endowment of a board of agriculture or the establishment of an agricultural bureau as a branch of one of the departments of the government, charged with the execution of important duties to be assigned by the legislature.

And the establishment of a system of education by which the freemen of this republic, destined to be as well the masters of the government as lords of the soil, may be as thoroughly instructed in the great business of their life as the professor of any other art or science. This is the primary and radical remedy for all the defects in our legislation ; and it is only by the adoption of this measure, that the prosperity and glory of the country can be laid on foundations of everlasting permanency.

Let the farmers, then, ponder these considerations. *They* hold the poison and the antidote. *They* only can entail on themselves the miseries of a policy of delusion and humbuggery, or establish that which shall, like perennial fountains, send forth, gushing and pure, unwasting streams

of prosperity and happiness. We call upon you, farmers, to take your own interests into consideration. If truth can rouse you, lethargy shall no longer bind you in her soothing but ruinous embrace.

#### AN ACCOUNT OF THE INSECTS INJURIOUS TO TURNIPS.

By Mr. Mathew Marmaduke Milburn, Thorpefield, Thirsk, Yorkshire.

[Silver Medal.]

From the Prize Essay of the Highland Agricultural Society.

Of all cultivated plants, perhaps there is not one which has more enemies in the insect world than the turnip ; the frequency, general cultivation, and rapid succession of the turnip, as well as the great quantity of its peculiar vegetable matter which is carried off by decomposition every year, when a turnip crop occurs, has doubtless tended considerably to increase the number of its natural enemies, and in but few years does the crop escape entirely the ravages of some order of the insect tribe. The great improvement of land for the last few years has brought soils under turnips which are not perhaps entirely congenial to their growth, but by forcing they may be obtained. My farm is not a real turnip soil, and, consequently, it is more liable to the depredations of insects of every kind, than a soil more decidedly calculated to grow turnips, and the plants are less capable of resisting the serious attacks made upon them in such cases, than when the soil is more congenial to their growth.

1. The first depredator which I shall notice, but of which, perhaps, so far as its natural history and habits are concerned, I know the least, is the turnip flea (*Haltica nemorum*.) From the smallness of its size, it requires a degree of minute attention, which I have been unable to give ; but of its effects I have witnessed sad examples. The insect is a small beetle, of a brassy black color, with two straw-colored stripes lengthwise on the wing cases. The insect usually makes its appearance about the 20th to the 27th of May ; if the weather be warm and sunny, generally at the first mentioned period. The numbers at this time are not very great. It feeds on every species of the genus *brassica*, and in the early stages of their growth does them serious injury, if it does not altogether destroy them. On being approached, it jumps from the plant and drops to the ground, usually with its back downwards ; the straw-colored stripes being much more distinguishable than its black under side. It has wings, but seldom uses them except when in the act of migration. It is quite an erroneous opinion to suppose that it can move only by jumping, formed probably because it is generally noticed jumping when it is approached.

The extent of the injury done is most serious. They commence by eating the plant just when the cotyledons are well unfolded, and in some cases consume the whole of the leaves. If they are not sufficiently numerous for this, they retard the growth of the plants, and impair their vital energy considerably, and often sadly injure a

crop after all traces of the insects themselves have disappeared. Great disputes have occurred whether the eggs of the insects are deposited on the seed, in the manure, or in the earth; but as these are matters of published notoriety, I conceive they have no right to be canvassed in an account like this. Thus much may be said, that the generally received opinion now is, that the eggs are deposited on the leaf, and that the minute larvæ feed in the interior of the leaf before they attain the flea form.\* I am strongly inclined to believe this from the fact, that generally for a week or more before the attacks of the fleas become any thing like so general as to threaten destruction to the plants, the latter lose their thriving appearance, their growth is arrested, and it is more than probable that the larvæ are then at work in the interior of the leaves, which the plant has to resist, instead of growing so rapidly as it otherwise would. A few insects remain in the perfect state through the winter; I have observed them on a sunny day in the beginning of November, though their appearance after August is by no means common.

Prevention of their attacks may be in some measure effected, but any application by way of cure, when they have commenced their ravages, is out of the question. I have tried sulphur, lime, soot, &c., without any perceptible effect; to prevent, therefore, should be the principal object. Those I have found to be most useful as preventives which most tend to excite the vigorous and rapid growth of the plants in their early stages. Thus, the ridge or drill system, in which the turnips are put in immediate contact with the manure, is most likely to enable the plants to overcome an attack. Plenty of seed is also desirable, as the thicker the plants come up, the more rapidly they grow, and the more vegetable matter there is for the fleas to consume. There is no fear of the crop being destroyed after the rough or secondary leaves are expanded. Another precaution is, to keep the land clear of weeds, and above all to preserve as much as possible the moisture in the soil previous to sowing in a dry season. As a more remote mode of prevention, the charlock, the turnips from amongst the growing corn, and the weeds of the cruciferous kind should be kept thoroughly down, as these form nurseries for the insects before they commence their attacks upon the turnips.

2. The next insect to the attack of which the turnip is liable is the black caterpillar, the larva of the yellow saw-fly (*Althia centifolia*). In 1835, the north of England was visited by these depredators to a most alarming extent; in the following year they penetrated into Yorkshire, and in small numbers into some parts of Scotland. The

attack in this year, though severe, was, however, less destructive than that of the preceding. The caterpillars are usually observed when the plants are of about three weeks' growth. In their early stages the caterpillars invariably attach themselves to the under side of the leaf. They are about one-fourth of an inch long, and of a whitish-gray color, and not very easily discerned. They change their skin at least three times during their existence in the caterpillar state, and after each change appear lighter colored at first, but in a few hours become a brighter, deeper black, destitute of hair, but the body considerably wrinkled. About twenty-one days after the caterpillars have emerged they burrow into the earth, and there form a cocoon or case, remain in it twenty days, and then emerge a yellow fly; again to breed and furnish a fresh supply of caterpillars. This fly is furnished with a peculiarly-shaped ovipositor of a saw-like construction, with which she punctures the edges of the turnip-leaf, and deposits her eggs singly. A portion, however, of the caterpillars which disappear remain in the cocoon until the following summer, to provide a supply of caterpillars for the succeeding year. I have bred them, and fed them in a glass jar, and watched the whole of their habits and changes, and I know of no insect which affords greater facilities for observation than the one in question.

The attack is solely confined to the leaves of the plant. They consume the whole of the cellular texture of the leaves, and nothing but the fibres remain. No plant can resist this, and the shortness of the work of destruction of as fine a crop as ever appeared above ground is almost incredible. I have observed as many as twenty caterpillars upon a single plant, and perhaps not one plant occurred in the field without some caterpillars upon it.

By way of prevention little can be done, as the only warning of a visitation given is the appearance of the yellow flies, which generally precede the caterpillars the most of a fortnight. I always instruct my turnip-hoers to leave their work in order to chase and destroy every fly they see of this description. In 1837, owing principally to this precaution, I believe my fields escaped, while some in the same parish were more or less consumed. When the attack has commenced the hoe ought immediately to be stopped. Ducks of about three weeks old should be turned into the field; if they are much older they will eat the plants and reject the caterpillars. Hand-picking should also be resorted to. I saved a field of eight acres in the "canker year," (1836,) by employing children to gather them, and put them into closed vessels. I gave these sixpence per day, and the numbers they gathered were enormous. I destroyed them by pouring boiling water upon them, which was instant death, though they will live for an indefinite period in cold water—it seems to slide from their oleaginous skin.

3. The next insect which the turnip crop is liable to suffer from is the wire-worm. A description of it is scarcely necessary, for, from the unlettered peasant to the scientific entomologist, every person who knows any thing of rural concerns is familiar with it. In order, however, to describe exactly the individual insect I mean, I may observe that the grub is of a yellow color; its body is nearly cylindrical, and composed of

\* The habits of the larva in this respect are no longer matter of conjecture. In a memoir on this insect, published in the 2d volume of the Transactions of the Entomological Society of London, Mr. H. Le Keux has demonstrated that the larvæ feed on the interior of the leaf, consuming its pulpy substance in the same manner as the mining caterpillars of various small moths, and certain dipterous larvæ. It undergoes its transformations in its subcutaneous galleries. The larva is figured in the memoir just alluded to, as well as in Westwood's Introduction to the Modern Classification of Insects, vol. i., p. 393.—ED. FARMERS' MAGAZINE.

twelve segments. Its head is rather brownish, and it has six feet situate near the head—this distinguishes it from a caterpillar.\* In the grub state it continues three years, which accounts for its destroying turnips, seeds, and corn crops, on the same piece of ground successively. It then emerges in the shape of a beetle, the distinguishing characteristic of which is, that, when taken by the posterior extremity, it depresses, and then suddenly elevates, its head and thorax, and gives a sounding *click*, hence it has been placed amongst the click beetles, and is called the *Cataphagus lineatus*. The beetle is about four lines long; color grayish-black; the wing cases have stripes of gray arranged longitudinally.

Its ravages are confined to the grub state, and it feeds on the roots of the turnips when they are from four to eight weeks old. I have seen as many as six wire-worms attached to the root of a single plant. Their presence may be detected by the falling of the leaves of the plant, and then assuming a dark deadly green. The insects eat the root at a depth of one or one and a half inch, and sometimes gnaw through the whole root, and the turnip of course dies. Occasionally a whole field, though more generally a portion of a field, subject to it will go off.

Cure there is none, that I am aware of, but much may be done by way of prevention. I have before me several cases noted down where a crop of potatoes, taken before the turnip crop, has effectually tended to prevent the attack. I will offer one striking instance furnished me by a personal friend. A trapezium-shaped field was in 1833 sown with turnips, excepting the angular side, which was potatoes, the turnips went off by the wire-worm. In 1837 the field was again in turnips. The part which was potatoes in 1833 carried a good crop of turnips, and were uninjured except the headland, which had not been potatoes, and where the turnips went off, as they did in the other parts of the field which had been turnips in 1833. I have heard of the wire-worm injuring potatoes, and of this I have no doubt, for I have found them half buried in the potato, but did they ever feed on them? I confined five wire-worms in an earthen jar with soil, and gave them a healthy potato. Not a particle of the potato was eaten, and the insects all died. I can easily conceive that, either in the agonies of death or in search of food, a wire-worm might burrow through a potato the same as through a clod of earth, but that they ever feed on it I cannot believe without better evidence than I have had hitherto. Whether it is that a potato crop actually starves the wire-worm from want of food, or whether there is some peculiar effluvia from the tubes or haum I cannot say, but the fact is well known by several eminent agriculturists I can name.

4. There is a too well known disease to which turnips are liable, called "fingers and toes." The fibres or tap root of the turnip, or both, thicken, and knobs of every conceivable shape are formed; these swell and crack, and of course begin to putrefy; this goes on, and the plants disappear rapidly until a field of promising turnips are not worth five shillings per acre. Those plants with

the most fibrous roots stand the attacks the best. Every conceivable variety of opinion has been mentioned as the cause of this disease. I shall not even advert to them, but give simply the results of my own observation. Knowing certain fields to be subject to attacks, I have narrowly watched the progress of plants from sowing time forwards. The first thing I observed before they were fit for hoeing, were several ash-gray colored flies resembling the house-fly, but somewhat smaller. On examining the nervures of the leaves, I discovered eggs of the flies resembling the "fly-blows" of the *Muscida*. In a week maggots were formed, which crawled into the ground and attacked the root of the plant. A puncture, however slight, will cause a flow of sap to the place, and a tubercle or excrescence is formed. In this the maggot fastens. I have detected six or eight at one plant; these continually gnaw it until they either destroy it or change into pupæ, and the plant putrefies and dies. Sometimes only one fibre is attacked and then the plant survives. They emerge from the pupa and assume the fly form, some in the same season, but more in the ensuing year, to spread again the work of destruction. I believe it is the *Anthomya brassicæ* of Bouche. The length of the fly is about three lines, color ash-gray. Male fly an indistinct black mark on the back. The wings are transparent. I have taken them and bred them, and having watched every stage of their existence, I am, therefore, clear as to the connexion of the insect with the disease.

A prevention to their ravages I have found in a summer fallow. It seems to banish the parent flies, which otherwise are of still habits, whereas the frequent successions of turnips, attended as they are by a great mass of decomposed vegetable matter, encourage the flies and perpetuate the evil.

5. Another little depredator, within the epidermis of the exposed portion of the bulb of the turnip and causing a little knob to rise on the bulb, appears amongst the insects feeding on turnips. In its existing form it is a maggot and the larvæ of one of the *Cynipidæ*; I believe it is the *Cynips brassicæ*. The injury, however, it effects is so trifling as scarcely to be worth naming, for the plants affected by it are often the finest in the field. I know of no remedy, nor indeed of any method ever attempted to destroy it.

6. The last noxious insect affecting turnips, to which I shall allude, is the plant-louse, *Aphis brassicæ*. To describe it is unnecessary—multitudes, nay myriads, assailed the crops in 1836. They feasted by thousands on every leaf, and deprived it of its juices. The leaves rose in blisters, and turned a sickly pale yellow, the bulbs were arrested in their growth, and most serious injury was done to the crops. In October they took wing, and were to be seen in clouds which filled the air, and raised much annoyance by getting into the eyes, mouth, &c. Providentially they were accompanied by large numbers of the lady-birds, (*Coccinellidæ*), which thinned them considerably. I know of no successful experiment being tried to prevent or cure. Applications of tobacco, &c., may answer for a gardener, but it is mere theory to recommend it to the farmer who has, perhaps, his half-thousand acres of turnips. Let encouragement be given to the increase of

\* All caterpillars, properly so called, have six feet in the situation alluded to. The writer means that it possesses these solely, there being no abdominal feet as in caterpillars.—*Ed. Far. Mag.*

swallows and other insectivorous birds, and if this could be generally effected, it would tend more to the reduction of noxious insects than any effort of man, no matter how effective, scientific, or combined.

#### MARL IN ALABAMA.

To the Editor of the Farmers' Register.

*Claiborne, Ala., June 12, 1841.*

Since I wrote you in January last, the subject of marl has attracted some notice, and the inquiry has resulted in the discovery of several beds of shells of great fertility and of unknown extent. A few feet below the surface of the earth, on the eastern bank of the Alabama river, and within the limits of this village, there is a deposit of shells of great variety, fertility, and of easy access; and the surprise is that they should not have been discovered sooner, and applied to purposes of agriculture, seeing the hints nature has manifested by *stripping them nearly bare*, and the effect on vegetable growth below them, by the washings of the finer particles. The trees, the shrubbery, and undergrowth of every kind, indicate a better nourishment. How they came there (they are above *high water mark*) is for the geologist to explain; but certainly their position, their very great variety, their loose and disunited location, excite a curious inquiry. These shells are different in form from those seen in the soft, or rather, lime-stone, and, as before remarked, are loose and disunited, whereas the others are cemented, and capable of being quarried and polished to some extent, either by the plane or drawing-knife, and are extensively used, as a substitute for brick in building chimneys. They are mostly round, elongated, and curiously indented on the edges, nearly in contact. Some resemble the shell of the periwinkle, with receding circles at each end. Some are nearly as large as an egg; others not larger than a pea; but all lying in one common and loose mass. The shells found in the *soft rock*, as designated with us, are mostly flat, or rather slightly convex, with the outer surface furrowed, and the furrows narrowing to one extremity. Some resemble the shell of the starfish, with the points beautifully fringed, and the inner surface with corresponding depressions, tattooed in a most curious manner. But by far the most interesting view is their application as manure to poor and nearly exhausted soils. The interest deepens here, and from experiments now making, no one can doubt their astonishing efficacy. A small lot has been planted in corn, and a double handful of shells applied to each hill. The effect is so plain "that he that runs may read," and as the season advances it will be still more manifest. Do you remember the experiment made by that sagacious philosopher, Dr. Franklin, on a "clover field bordering on one of the avenues to the city of Washington, with the plaster of Paris, forming the following sentence:" "This has been plastered." A writer adds, "So astonishingly luxuriant was the vegetation, when the operation had been performed, that it became a matter of general comment." Many a poor pilgrim will sojourn here ere long, to read this experiment, and to improve his bad corn.

About five miles below this place, and on the western bank of the river, there is a similar deposit; and still lower down the river, some eight or ten miles, there is another; all said to be equally rich, abundant and accessible. I have observed, as a general fact, that our richest alluvial lands are in contact with the poorest pine lands, and I have thought their great fertility was owing to the washings of the fine particles of sand, incorporated with animal and vegetable matter. For certain it is, no lands are sooner exhausted than these when not inundated; they become loose, extremely sandy, and incapable of sustaining vegetation of any kind. To remedy this evil, (and it is one of some magnitude, and increasing yearly, as embanking becomes more general, and the lands more worn,) we have a manure, cheap, readily prepared, of immense fertility, (yielding 90 per cent. of pure carbonate of lime,) and in great abundance. And by adding the further consideration of health, which has been proven, if any doubt, by shelling the streets of Mobile, and it would seem a matter of surprise that these extraordinary advantages and inducements have not been in general use and common practice, long since.

L. J.

#### CULTIVATION OF THE FILBERT.

From the Magazine of Horticulture.

The filbert is one of the finest nuts, and although great quantities of the fruit are imported, and sold in the fruit shops annually, there are scarcely any, as yet, cultivated in the United States. A sterile variety of the English filbert may be seen in many of our gardens, which rarely produces any fruit; but the finer sorts, which thrive luxuriantly, and bear most abundantly in this climate, are scarcely known in cultivation. Nothing can well be easier than the cultivation of this shrub or tree, and we are confident that were the merits of the better varieties generally known, no garden would be considered complete without them.

A few years since, we imported small plants of the most celebrated English varieties, and have, without the least attention to pruning, realized quite an abundant crop of fine nuts, for two years past, which are quite an acceptable addition to the dessert.

Among the finest of these varieties are the *Frizzled*, the *Red Kernel*, the *Northampton Prolific*, the *Cobnut* and the *Cosford*. We have found the *Cosford*, *Frizzled*, and the *Northampton Prolific*, the most productive varieties in this climate. All the varieties grow very vigorously in any good soil, naturally dry rather than moist, but a dry gravelly loam, or sandy loam, is considered preferable. In pruning and training filberts, the most important requisite is to keep the main stem free from all suckers; and the second, to prevent too great a luxuriance of wood, which if suffered to grow at random, will prevent the production of large crops. The nuts are produced, both upon the sides of the young wood, and upon lateral spurs, annually produced on the older branches, after the previous year's bearing lateral shoots have been trimmed away. Abroad, therefore, what is called the *spurting* in system of

pruning is adopted, and the extremities of the leading shoots are shortened every spring. This throws nearly all the vigor of the tree into the bearing branches, and produces a larger crop of fruit annually.

In some parts of England, large plantations of filberts are made, for profit. Kent is the most celebrated nut growing district, and the average crop there is about eight hundred weight per acre, although, in good soils and favorable seasons, thirty hundred weight has been raised on an acre of ground. The bushes are generally trained with single stems, and the heads pruned in the form of a hoop, kept about six feet high from the ground.

There does not appear to be the least obstacle to the profitable cultivation of the filbert on a large scale, in this country, and our dry summers would probably be found more favorable to the production of large crops, than the moist ones of England. A return of fruit is speedily received after planting on good soils, and we would, with confidence, recommend the trial of a filbert orchard, to enterprising cultivators.

In gardens, a row of the finer sort of this fruit may be advantageously introduced, as a screen or barrier, in portions where such a feature is desirable, as the foliage is large and dense, and thus the double advantage of fruit, and privacy or protection will be realized.

Newburgh, N. Y.

A. J. DOWNING.

#### FOR THE BITE OF A SNAKE.

The most simple and convenient remedy I have ever heard of is alum. A piece the size of a hickory nut, dissolved in water and drank, or chewed and swallowed, is sufficient. I have good authority for saying that it has been tried many times on men and dogs, and that they have invariably recovered. I know of some planters whose hands are exposed to be bitten by rattle snakes, who keep them always provided with it in their pockets, and that they have several times found use for it.—*Macon Messenger*.

#### THE ROSE-BUG.

From the American Farmer.

This little insect wherever it is known at all is known to be extremely destructive to some other flowers as well as the rose, and is sometimes so numerous as to destroy all the early cherries, the hautboys, the grapes, and sometimes the more delicate varieties of the peach. Many years ago I have often lost all these fruits except some of the varieties of the peach by these destructive insects. Of late years they have done me little or no injury, and they are nearly extirpated from my premises—they are only to be seen at the places of their destruction—these are *Linden trees when in blossom*. When these trees first begin to blossom about my yard and garden, at one of them over a hard naked walk, I was surprised to find the rose bug, which had been vastly numerous and destructive for many years before,

dead in great quantities under it—as many as a pint or quart might be swept up under it at a time dead. My first impression was, that the bugs died about the linden tree after depositing their eggs and terminating their natural career, but such is not the fact, and I now speak with confidence, after several years' observation and experience, when I say, the blossom of this tree destroys them, and will extirpate, or nearly so, the race from its immediate vicinity, on the farm on which they grow. This fact seems to be out of the ordinary course of nature, for we are taught to believe that all animals in a natural state are led by the wise instinct of nature to avoid that which will poison or destroy them. In rushing into the enjoyment of the delicious fragrance and honey of this flower, they precipitate themselves on their own destruction.

I state the fact, for the information of florists and fruiterers, and hope that those better skilled in philosophy and natural history, may solve the seeming heterodoxy of it.

On visiting Mr. George Law's residence at the west end of your town some days since, which may well be styled the "*multum in parvo*" of good and pretty things, I could but ask the question why our brother farmers should send to New England for pigs, when they may find all the European improved varieties in Mr. Law's possession, bred with great care and which may be bought at prices much lower than the prices at the north? Is a thing better in proportion to the distance you go after it, and the risk of its loss you run in transporting it—or is an animal bred in Europe and costing thirty guineas, with the cost of transportation added—better than the same animal bred in this country from the same parents at a cost of twenty dollars? This is another problem which I will thank you, Mr. Editor, to solve.

T. E.

Poplar Grove, 18th June, 1841.

#### USES OF IRON.

From the Public Ledger.

There is a handsome row of stores now under construction at the corner of John and Cliff streets, New York, in which large circular hollow pillars of cast iron are substituted for the ordinary granite fronts. The ornamental caps and string pieces are also of iron. There is a peculiar gracefulness and lightness in their appearance. Their durability will not be questioned, and their cost does not exceed one-third the price of granite. Care should be taken not to put lead in contact with iron where it is exposed to moisture. A galvanic action is excited that is very destructive to the iron, which is the more oxidizable metal. This curious phenomenon may be observed in the iron railings of the Philadelphia Library in South Fifth street, and in the house next below. The iron is in some cases entirely eaten away where it touches the leaden filling. I observed last spring an expensive zinc roof on Mrs. Chancellor's new country seat, on Schoolhouse lane, which they were stripping, because it had been ruined by using iron nails to secure it to the rafters.

ANTHRAX.

## NUT GRASS.

To the Editor of the Farmers' Register.

*Elizabeth City, N. C.*

\* \* \* You will gratify me by asking your many valuable correspondents, if they can find any way to destroy what is called in this section the *nut grass*, a useless and troublesome grass in our gardens. I have seen no notice of it in the papers I take; and your drawing attention towards it might lead to some valuable information.

## MANAGEMENT OF BEES. THE SUBTENDED HIVE.

[The following extract is from a neat pamphlet of 70 pages, which has recently issued from the press of Cincinnati, and for which we are indebted to the attention of its author, Thomas Affleck, esq., one of the editors of the *Western Farmer and Gardener*. This little treatise seems to be the work of a judicious observer. Its rules for practice are *reasonable*, because founded on the natural habits and propensities of the bees; and the directions seem well adapted to the ends in view, which are principally to guard the lives of the bees from their deadly enemy the moth, and their health from improper exposure to too great changes of temperature or worse effects of weather.—E. D. F. R.]

From Affleck's Bee-breeding in the West.

In adopting a plan for the keeping and management of bees, several important points must be considered. It must combine simplicity with convenience, and cheapness with durability. It must allow of the inmates proceeding in their own natural way; of the proprietor removing honey when it can be spared, without disturbing or injuring the bees. It must afford them, during winter, a warm and dry habitation; and in summer a cool and airy one. Its entrances must be so arranged, as to allow the bees a free passage, and yet enable them to defend themselves from enemies. It must afford, with a reasonable degree of care, complete protection against the moth; and facilities for putting two or more weak swarms together, where they come off late in the season. And it ought to give the proprietor control over his bees, as perfect as the nature of the insect will admit of.

All this, and more, can be attained by the use of the *subtended hive*. It is a simple and economical plan; of easy management; and one within the means of any farmer who can handle a saw, a plane and a hammer.

The boxes of which it is composed, are formed of good, well-seasoned pine plank—if possible, free from knots and wind-shakes. It ought to be at least one inch thick. The boxes may be ten, eleven or twelve inches square, [cubic space,] in the clear. Let the plank be dressed on each side, and jointed on the edges, so as to fit close, without being tongued and grooved. Before nailing them together at the sides, lay a thin strip of thick white lead paint on the edges to be nailed, which will render it im-

pervious to the ovipositor of the moth. In the top cut two semicircular holes at the front, and two at the back, of one inch and a half in diameter—the straight side being in a line with the back and front of the box, so that the bees may have a straight road in their way from one story to the other. Put the top on without any layer of paint, using eight stout screw nails, that it may be taken off to facilitate the removal of the honey. Give the outside of the box two coats of white lead paint, all except the top; and let it be done so long before it is necessary to use it, as that the smell may be dissipated, as it is very offensive to the bees. Pour a little melted bees-wax, while pretty hot, over the inside of the top, which will enable the bees to attach their comb much more firmly. Let three-quarters of an inch of the thickness of the lower edges of the box in the inside be bevelled off, so as to leave but about one-fourth of an inch of surface to rest upon the stand—this will afford less shelter for the eggs of the moth.

We will suppose the boxes, thus made, to be a cube of twelve inches inside. In that case, the tunnel stand will be made thus. Take a piece of two inch pine plank, free from knots and shakes—what carpenter's term *clear stuff*; length 26, and breadth 18 inches. Ten inches from one end, and two from the other and from each side, is marked a square of fourteen inches. From the outside of this square, the board is dressed off, with an even slope, until its thickness at the front edge is reduced to half an inch, and at the other three edges to about an inch. The square is then reduced to twelve inches, in the centre of which is bored an inch auger hole; to this hole the inner square is also gradually sloped to the depth of an inch; thus securing the bees from any possibility of wet lodging about their hive, and affording them free ventilation. There will then be a level, smooth strip of one inch in width, surrounding the square of twelve inches, on which to set the box or hive. Two inches from the front edge of the stand, commence cutting a channel two inches in width, and of such a depth as to carry it out, on an even slope, half way between the inner edge of the hive, and the ventilating hole in the centre. Over this, fit in a strip of wood as neatly as possible, dressing it down even with the slope of the stand, so as to leave a tunnel two inches in width by a quarter of an inch in depth. Under the centre hole, and over the outlet of the tunnel, hang small wire grates, the one to prevent the entrance of other insects; and the other to be thrown back to permit the exit of the bees, or fastened down to keep them at home in clear, sun-shining days in winter. For feet to the stand, use four to five inch screw-nails, screwed in, from below, far enough to be firm. The lower side ought also to be planed smooth; and the whole should have two coats of white paint some time before it is wanted.

The apiary or bee-shed may be of a length adapted to the number of stands for which it is intended; and ought to be at least six feet in depth, and six feet in height at the back. It may be built in the cheapest manner, and yet combine, as represented in the frontispiece, economy and convenience, with neatness and taste. Locust posts, sunk in the ground, with rough plates and rafters, covered over-head with clapboards, and

behind with rough planks; the arches in front composed of crooked limbs; the inside and the back whitewashed with lime every spring; the front and ends covered with creepers, so trained as to be out of the way of the bees, and not so thick as to harbor insects; and the floor paved with brick, or laid with gravel, rolled firm, will be all that is necessary. A good, sound plank will be run lengthways of the shed, supported by stout legs, to answer as a bench on which to set the stands; and must allow of an alley, two and a half feet in width, behind it. The bee-shed may front in any direction—though it is best to protect it from the hot summer's sun; from the extreme cold of winter; and from the sudden thunder-gusts so common from the south-west in summer. An eastern or south-eastern exposure is preferable. Let it be so placed, as that the motions of the bees may be conveniently watched from the house, without having them in the way.

We will suppose that an individual, who wishes to keep bees, has provided himself with a few boxes and tunnel stands, during the winter; has erected his bee-shed, and is ready to purchase his parent hives. In this we will assist him, and also in the subsequent management during the season—premising, that the time, *as to dates*, must be regulated by his own observation: it will vary in different latitudes.

In the purchase of stock-hives, much care is necessary. It unfortunately happens, that in the west there is but little choice—almost all are indifferent alike. The proper season for purchasing, is in the fall, winter, or early spring. Select a hive as well made and as free from cracks and crevices as possible. Let the swarm contained in it be not more than two, or at farthest three years old. Examine the interior as carefully as practicable; if there is any appearance of bee-moths or their larvæ, reject it. But if it is pretty well filled with fresh-looking comb, the bee abundant and active, the box or gum tolerably sound, and the whole weighing, exclusive of the hive, over 20 or 25 pounds in the spring, you may safely purchase. As to price, that may be estimated according to the number of bees and probable weight of honey; and may rate for a good hive, at from four to ten dollars.

The greatest care must be exercised in removing it. The best way to do so, is to enclose the hive in a cloth, and let two men carry it, suspended to a pole. If the distance is great, it will have to be conveyed in a spring wagon, or on a sleigh; great care being used not to jolt it. A very slight jolting will detach the comb, and throw the whole into ruins. Having got it home safe, place it where it is to stand, and if the box or gum is not in very good order, repair it as well as circumstances will permit, turning it up and removing all appearances of the moth, and cutting away the old, black empty comb. The bees will thus have some space afforded them, where they require and want it, and will throw off stronger swarms in consequence. Early in May, if the season be favorable, they will begin to throw off their first swarms—varying as to time in different locations. In the mean time, preparations ought to be made for their reception in the apiary; the hives and stands should be got ready, and a shelter erected; an open shed answering very well, so arranged as that they shall not be exposed to the full blaze of

the hot summer's sun. A few trees in front, of a moderate growth, and trimmed up sufficiently to prevent the bees being entangled in the branches, in returning loaded to the hive, will be found of great assistance in swarming, as the bees will almost invariably settle on them, and remain from fifteen minutes to an hour, affording abundance of time for saving them, if the proprietor has every thing ready. But if they are allowed to go off a second time, there is little or no hope of saving them. All the noise usually made by beating tin-pans, ringing bells, etc., is perfectly useless; though it may sometimes happen, on a very clear, warm day, that they will show an unwillingness to settle, in which case they may be induced to do so, by casting a few ladles full of water amongst them, and even by firing a gun near—the concussion throwing them into confusion, and inducing them to settle. When they are all quiet, take a box, the holes in the top of which have been carefully plugged up, and after seeing that it is clean and sweet, shake or sweep the young swarm gently into it. The face and hands ought to be protected by a veil and gloves; for though bees are not inclined to sting when swarming, if gently handled, yet a chance-sting inflicted on a tender place, will discompose the most firm, and probably occasion twenty more—for it is well known, that the odor of the poison is very strong, and immediately perceptible to the bees, having a most irritating effect upon them. If the outsides of the box have not been painted sufficiently long to allow the smell of the oil to dissipate, it will be well to rub it over, inside and out, with some sweet herb, such as balm, or even with hickory leaves, which will make them better satisfied with their quarters.

A small table ought to be at hand, covered by a clean towel, on which to set the box, after the bees have been shaken into it, first placing a small stone or chip under one edge to allow them a free passage. If they settle in such a place as that the box can be firmly propped up over them, they will generally go into it without farther trouble—or if necessary, they may be gently swept into the box with a small wisp of a broom-corn, or a bunch of feathers. After they have been hived and placed in some secure situation, let them remain till evening, taking care not to leave them exposed to the full blaze of the sun, but shade them. They must be watched, until it is seen that the workers are coming and going as usual, for they sometimes go off, after they are to all appearance quiet.

In the cool of the evening, carry the hive to the apiary, and setting a clean tunnel-stand under it, place it where it is to remain—leaving a space of two feet between each stand.

It rarely occurs that a swarm fills a greater space than one cubic foot—if however, when a very large one comes off, they seem to be too crowded in the hive, add another box below, leaving the holes in the top open. If one box is found sufficient, let them remain in it; and in about ten days or two weeks, the state of affairs inside may be examined into, by gently lifting up one edge of the box, at daybreak, and if it be found that it is nearly filled with comb, immediately add the second one to it. This will generally be found needful.

Later in the season, it frequently occurs that

small, weak swarms are thrown off. These may either be returned to the parent hives, or strengthened by putting two or three together. To do this, place the one box under the other in the evening, leaving the communication open between them—shut down the grate over the tunnel-entrance; and burn a piece of leather for a few moments under the ventilator below, which will destroy that peculiarity of odor, by which the inmates of the different hives are enabled to distinguish each other; and will also completely disarm and confuse them, and prevent the possibility of a disturbance arising from the union. They will soon regulate matters amongst themselves, so as to become one family. If however there seems to be an unusual degree of excitement in the hive next morning, keep the grate shut down all day—if not, throw it open in the morning. It is much better to put even three swarms together, and thus form one strong one, than to have them in separate colonies, weak and inefficient. In fact, as a general rule, every swarm ought to fill a No. 1 hive, and require the addition of a second box, forming a No. 2, within ten or twelve days.

There are many good and sufficient reasons why this rule should be enforced, and the strength of each hive kept up. When a weak swarm comes off, and they are left, a mere handful in their hive, they rarely stay—but, seeming to feel their own weakness, and their exposure to enemies they abandon their new home and return to the other hives, leaving behind them a few thin flakes of comb. And if they do remain, it is almost impossible to protect them from the moth; whilst a strong hive is rarely invaded by that, or any other enemy.

The subjoined hive renders the putting of two or three swarms together, a very simple process.

After carefully examining all the different plans recommended for defending bees from the inroads of the moth, and seeing them tried and trying them myself, I find that the only true and infallible preventives, are *care and neatness*. When it is considered, that during the whole summer, this active enemy is at work; that wherever there is a crack or a crevice, there she will insert her eggs; that there they hatch and become small, white worms; that these worms, as they travel along in the interior of the hive, spin a silken covering for their bodies—a sort of tunnel, within which they are perfectly safe from the attacks of the bees—their head, which alone is visible, being hard and horny; that if by any possibility they are dragged from this tunnel, they immediately, like the spider, suspend themselves by a silken thread, by which they can at any time return to their former quarters. When all these facts are taken into consideration, it will be seen at once, that if the moth is allowed a footing at all, it will retain it—and if so, the destruction of the hive is inevitable.

Let the apiarist have his stands and boxes well and carefully made; let him examine his bees, at least once a week; let his assistant lift up the hive from the stand, which must be removed, the lower edge of the box cleaned of every appearance of the moth, and of all filth, and immediately replaced where it stood before, on a clean, fresh tunnel-stand. Let the stand that was removed, be effectually cleaned, when it may be used to

supply the place of the next one to be removed—and so on through the whole. The apiary or bee-shed must be kept clean and airy; should be whitewashed every spring; and if once or twice during the heat of summer, the bees were all gently removed some cool evening—the apiary covered up close with old carpets, &c., and a strong smoke from tobacco kept up in it for half an hour, every insect would be destroyed. The floor and shelves, &c. would require to be afterwards swept off clean and watered; the shed being left open till morning, for ventilation, and the removal of the odor of tobacco, before the bees were replaced, which they must be by sunrise next day. Every opportunity must be taken to destroy the moth when visible—either by hand or by placing during the evening, a bright lamp over a basin of water or soapsuds, in front of the apiary, which will attract them; and they will like all of this tribe of insects scorch their wings and perish.

Towards the latter end of August or early in September, the grand attack will be made on the drones ending in their complete destruction. No top-boxes should be removed until this takes place—though if much needed, they may be taken off. It is better, too, to let them remain in their place over winter until they are required, as there the honey will not become candied. Immediately after a box is removed, the holes in the top of the box on which it sat, must be neatly plugged up.

Bees ought not to be permitted to leave their hives until settled warm weather, in the spring; and until the first wild flowers come in bloom. We have frequently a few clear, warm days in the winter, when the bees, particularly if the stands face the south and are exposed to the sun's rays, will leave the hives and fly about. This should not be permitted—during such days, keep the grates shut down. They can gather no honey, nor be benefited in any way—many of them perish by being exposed to an occasional chilly blast, or become the prey of birds. Every bee, at this season of the year, is valuable.

If it becomes necessary to feed a weak swarm during winter or early spring—which may very soon be known by the weight of the hive—it must be done, by supplying them with a little honey in the comb; or syrup prepared by adding two quarts of water to one of honey, and boiling a few minutes, after adding a table-spoonful of salt—skim off all impurities, and after it has cooled, pour a little into a plate, over which lay a few twigs—raise the lower box, and place this on the stand, where the bees will quickly find it. Where honey or sugar is scarce, they may be fed with a syrup prepared from the sugar-beet, thus—after carefully washing the roots, grate them down, and press out the juice; to each gallon of this, add one tea-spoonful of sulphuric acid, (oil of vitriol,) three tea-spoonfuls of chalk or whiting, and one table-spoonful of salt—boil until all impurities are thrown off, and there will remain a fine syrup, on which bees will do well.

Every other day, instead of this syrup, they may be supplied with a little fresh, sweet corn meal, to which has been added about one-sixth of fine salt—sift the mixture on a plate, which place on the stand.

Humidity or dampness is always to be guarded against; bees suffer more from it than from cold.



On this account, snow should never be allowed to lodge round the hives. Nor ought the stands to be removed and cleaned during damp weather—though this must be attended to at least once a fortnight, all the year round, and more especially in winter.

The most simple and perfect cure for the effects of the poison from the sting of a bee, is to wet a piece of indigo and rub on the spot—this will immediately relieve the pain, if applied soon, and prevent the swelling. The juice of a raw onion is also said to be equally efficacious.

#### ON THE RELATION OF THE CONSTITUTION OF SOILS TO THEIR FERTILITY AND IMPROVEMENT.

To the Editor of the Farmers' Register.

Prospect Hill, (Ky.,) 17th June, 1841.

Nothing can be more important to the interest of agriculture, than a correct understanding of the means by which the natural fertility of soils may be preserved, and such as have been deteriorated by injudicious husbandry may be renovated. You have rendered a very important service to the most useful of all sciences, by your *Essay on Calcareous Manures*. I propose, in this letter, to make some desultory remarks upon the same subject; and shall be much gratified, if I shall be able to throw even the smallest light upon a question of so much interest.

Sir H. Davy, in his *Agricultural Chemistry*, says "the earths, and even the earthy carbonates have a certain degree of chemical attraction for many of the principles of vegetable and animal substances." That, "in most of the black and brown rich vegetable moulds the earths seem to be in combination with a peculiar extractive matter, afforded during decomposition of vegetables. In the extract quoted by you, at page 30, he seems to place the chemical energy of alumina, and carbonate of lime, in preserving putrescent manures, upon an equality. I concur with you, that the powers of attracting and retaining these manures, possessed by these two earths, differ greatly in force. Taking for granted that carbonate of lime has a very powerful chemical energy, in attracting and retaining those elementary principles which are the appropriate food for plants, and that the other earths and earthy carbonates possess this power only in a slight degree, it will readily appear why soils destitute of lime, in any state of combination, "cannot be improved durably or profitably by putrescent manures, without previously making them calcareous."—*Essay on Calc. Man.*

In a state of nature, soils are enriched mainly by the decomposition of *vegetable matters* on the surface of the earth. If these were to undergo a rapid decomposition, a considerable proportion of the elements, constituting the appropriate food of plants, would escape in the form of gas, and consequently be entirely lost. And hence, if the growing vegetable had derived its nutriment altogether from the soil, it would restore much less than it had extracted for its nourishment; and would exhaust instead of increasing its fertility. But, in general, the decomposition of vegetable matter, on the surface of the earth, is so very slow

and gradual, that but little loss occurs from that process. And as vegetables derive much of their nutriment from the atmosphere, the quantity of vegetable food restored to the earth, by their decomposition, commonly greatly exceeds that which has been drawn from the earth for their sustenance. In a state of nature the entire vegetable growth is left upon the soil. When this dies, and falls upon the earth, it becomes subject to the effects of dews and rain. These, before decomposition can take place, draw off from the vegetable matter an *extract*, which is thus carried down into the soil, and only the more fibrous parts remain on the surface to undergo slow decomposition. And this also, when converted into mould, gives out an *extract* to rain-water, and is thus carried down into the soil. Though that part of vegetable mould, which Berzelius terms *geine*, is directly but slightly soluble in water, yet it has been demonstrated by Th. de Saussure that the three constituent principles of vegetable mould "may be converted the one into the other, under the alternately preponderating influence of air and water." Thus *vegetable extract*, *carbonaceous mould*, and *geine* may all, by the influence of air and water, be rendered soluble and be carried down into the earth. The *extract* of vegetable matter, mould and *geine*, which thus mingles with water and descends with it into the soil, is so slightly combined with it, that the earths and earthy carbonates, having a stronger attraction for it, will draw it off from the water and fix it in the soil. But these earths and earthy carbonates (if there be no lime present) will soon become saturated, and consequently can draw no more of these ingredients from the water. The quantity of food for vegetables laid up in store, in the soil, would seem to be limited to the amount which it is capable of retaining in a state of combination. This is not great when lime, in some form of combination, is not present, but very considerable when it forms a component part of the soil. Hence the great difference in the capability of improving by vegetable and putrescent manures soils which have and which have not lime as one of their ingredients, in some form of combination. When soils, destitute of lime in any state of combination, become completely saturated with those fertilizing elements which constitute the food of plants, it might be supposed the remainder would continue united with the water, by which they were carried down into the soil. This would be true if there were any chemical attraction in the earths to fix and retain the water in combination with them, until the vegetable food could be drawn off by the spongelets of the growing plants. But such is not the fact. Water will rise to the surface of the earth, whence it will be carried off by evaporation and the absorbing power of the atmosphere. But it cannot carry with it the vegetable extract with which it was combined. The experiments made by Sir H. Davy upon grasses, as detailed in his *Agricultural Chemistry*, show that the *extractive matter* is always left as a residuum, upon boiling the decoction. Although water may bring back to the surface of the earth such portions of the vegetable extract as may not have been drawn from it by earths, having a stronger attraction for it than the water, yet it cannot be carried off by evaporation or absorption, and consequently it will be left at or near

the surface of the soil. This deposit of vegetable extract is one of the causes why vegetable mould is most abundant at and near the surface of soils, and assists in producing "the black and brown rich vegetable mould," in which Davy says "the earths seem to be in combination with a peculiar extractive matter afforded during the decomposition of vegetables." Hence there would seem to be a continual accumulation of geine and other vegetable matters at and near the surface, so long as the quantity of such matters furnished by decaying vegetation exceeds that which was consumed by the growing plants. In the course of time, this accumulation of vegetable matter, at the surface of the earth, would become very great if there were no means of carrying it off. In calcareous soils there is a chemical agency, which exerts great energy in retaining and confining this superabundance of vegetable food, so that the accumulation becomes very considerable. But in soils which are destitute of calcareous earth no such considerable accumulations are found. This is probably owing in part to the nature of the vegetable growth, which may be incapable of drawing much of its food from the atmosphere, and consequently the decaying vegetation may furnish no more vegetable matter to the soil than it drew from it for its own nourishment. But as exhausted lands, even in the poorest soil, when suffered to grow up in timber, are found to increase slowly in fertility, it follows as a necessary consequence, that in the course of time there would be a considerable accumulation of vegetable matter on the surface of the soil, unless some agency is at work to carry off the superabundance. What that agent is, and what are the best means of counteracting its effects, is an important inquiry. From the tenor of your 'Essay on Calcareous Manures,' it is obvious you suppose the effect is produced by certain vegetable acids neutralizing any lime which may formerly have composed one of the ingredients of the soil, and then combining with geine and other vegetable products, and thereby rendering them unfit for vegetable food for the more useful plants. If your views on this subject are correct, it would seem to follow that there is in fact no loss of vegetable food from the want of a soil to fix and retain it, but that it is only rendered inefficient in consequence of its combination with certain acids in the soil. And it would seem that, if it were all retained in combination with acids, by the application of a due proportion of carbonate of lime the accumulated food of plants would immediately become available, and the soil be restored to the highest degree of fertility of which it was capable. These views are very encouraging, and you have sustained them by such proofs and illustrations as to render them extremely probable.\*

\* The opinion expressed in the last passage we consider as sound and true within certain limits—but not to such extent as supposed by our correspondent. Vegetable matters, the remains of plants previously grown there, do, from several causes, greatly accumulate on naturally poor lands, left at rest, and especially on forest lands. But this accumulation has a limit, which is fixed in each case by the circumstances of the soil; and when that limit is reached, we infer that

The recent discovery of *geine* or *humin*, and the acid found under certain circumstances by the combination of oxygen with this base, seems to prove that the existence of an acid in a soil is not *always prejudicial* to the growth of useful vegetation. Professor Rennie, as quoted in your essay, says, "humic acid, however, which I may remark is not sour to the taste, readily combines with many of the substances found in soils and manures, and not only renders them, but itself also, easy to be dissolved in water, which in their separate state could not take place. In this way humic acid will combine with *lime*, *potass* and *ammonia*, in the form of humates, and the *smallest portion of these* will render it soluble in water and fit to be taken up by the spongelets of the root fibres."

No farther remarks, "It appears to have been from ignorance of the important action of the humic acid in thus helping to dissolve earthy matters, that the older writers were so puzzled to discover how lime and potass got into plants." Professor Rennie says *humin* or (as called by Berzelius) *geine* is composed of carbon and hydrogen, and the addition of oxygen to this base to form *humic* or *geic acid*. This, I apprehend, can no more render it poisonous to plants than the addition of oxygen to carbon, thereby forming carbonic acid, can render that substance prejudicial to the growth of vegetation. This acid, so far from being prejudicial, is the principal source of the supply of food for vegetables from the atmosphere.

Berzelius says that "the carbonaceous mould, which changes a part of the air [atmosphere] into carbonic acid, is itself changed by the air into geine and into the extract of mould; and it is upon this transformation that appears to depend, in part, the advantages derived from the tillage of the soil, which is divided by the action of the

the value of all subsequent additions is lost, as regularly as received. Thus, we suppose that the common poor pine and whortleberry ridges of lower Virginia, which will scarcely produce more than 10 bushels of corn, in their new and best state, actually have at first vegetable manure enough to produce 25 or 30 bushels; and which vegetable manure might have been made useful, be fixed, and become permanent in the soil, simply by adding enough of calcareous manure, at or before clearing the land, and giving time for the two to combine together, and both with the soil. But no more than the supposed maximum of vegetable matter (in its various and progressive states of decomposition,) could remain *uncombined* with the poor soil; and if left for 1000 years without cultivation, we suppose that there would be not only no further increase of fertility, but also, in our warm and dry climate, no greater accumulation of vegetable matter. The excess would rot, and go off in gases, the final products of decomposition.

But, notwithstanding the exception stated, and others unnecessary to state here, the views presented by Judge Beatty are certainly correct, and such as we meant to maintain within very extensive limits; and so extensive as to afford as much *encouragement* to the improver of soil, as need be desired.—Ed. F. R.

plough and exposed to the immediate influence of the air."

Einhof has ascertained that *geine*, in acid soils, is combined with phosphoric and acetic acids; and De Pontin, it is said, has also found it combined with the malic acid. These authorities are abundantly sufficient to prove that *geine* is found in a state of combination with a variety of acids. Some of these combinations are found not to be prejudicial to vegetation of the most useful kind, but, in some of its combinations, it may only suit the growth of vegetables of an acid character, as you have shown in your Essay on Calcareous Manures. I have said that the *extract* of vegetable matter, combined with water in the earth, will remain behind, when the water is carried off by evaporation and absorption. The question then presents itself, can there be no loss of *vegetable extract*, or *geine*, except that which goes to supply the sustenance of growing vegetation? If there can be none, it would follow that, in a state of nature, where the natural growth is such as to give back to the soil more than is drawn from it for its nourishment, and where the land is sufficiently level to prevent a loss of soil by washing rains, there would be a constantly increasing accumulation of *geine* and other vegetable matters, so that the enriching process would be *ad infinitum*. But I apprehend we cannot rely upon the energy of even our best constituted soils to do thus much for us. There is probably a limit to the capacity of all soils in this respect. When this is supplied, the loss, in a state of nature, in supplying nutriment to the growing vegetation, and otherwise, is equal to the gain.

Dr. Peters, of Kentucky, in a very valuable article, published in the Kentucky Farmer of the 17th of April, 1841, speaking of vegetable mould and its solubility, says, "If this mould be washed with water, that fluid will dissolve a portion of it, and if the insoluble residue, after washing, called carbonaceous earth, by Berzelius, be exposed again to the air and moisture, for some time, it will be found again to yield soluble matter to water. This it continues to do until it is entirely washed away; but during the process of this change, it is also continually, although slowly, absorbing oxygen from the air, which combines with its elements, and passes off again in carbonic acid and water. In this manner it gradually disappears in soluble matters and gases and vapors."

If these views are correct, as I think they are, they strongly corroborate your opinion, that "the richest and the poorest soils each exerts strongly a force to retain as much fertility as nature gave them—and that, when worn and reduced, each may easily be restored to its original state, but cannot be raised higher, with either durability or profit, by putrescent manures, whether applied by the bounty of nature, or the industry of man."

There is a point, then, beyond which soils cannot be permanently enriched, without an improvement of their *constitutional organization*, which may be done by supplying those ingredients of a good soil which are deficient, such as clay, where sand is too predominant, and carbonate of lime, where that is deficient, &c.

But without a change in the constitutional organization of the soil, we cannot hope to carry its fertility, *permanently*, beyond what it had acquired in a state of nature. Soils which have been re-

duced by cultivation, where they have not been injured by washing rains, may be easily renovated. This must be done by again supplying them with those fertilizing ingredients of which they have been deprived by bad husbandry. This may be accomplished, in part, by the application of manures; but it is to the atmosphere we must look as the great storehouse whence we are to draw the necessary supply of vegetable food. To this end, those green crops should be freely cultivated, which derive most of their food from the atmosphere. In soils adapted to it, red clover is the most suitable for this purpose. It is by far the most convenient, and the cheapest method of renovating exhausted soils. It not only supplies a great deal of vegetable matter to soils that have been much reduced, but it is admirably calculated to pulverize, and reduce its component parts to a finely divided state, and thus to produce a condition favorable to a combination with those elementary principles which are furnished by the atmosphere; and also greatly increase its capacity for absorbing moisture. Care should be taken also to suffer as few weeds to ripen their seeds as possible. These, previous to the time of ripening their seeds, derive nearly the whole of their nutriment from the atmosphere. By destroying them before they seed, nearly their whole product of vegetable matter is a net gain to the soil. Exhausting grain crops should be sparingly cultivated till the soil is completely renovated, and then should bear only such a proportion to the green crops as the soil will bear without deterioration. It should be a fixed principle never to suffer the soil to *deteriorate*, for as it costs as much to cultivate a soil, producing only half or two-thirds of a crop, as if it produced a full crop, it is perfectly clear that it is the interest of the cultivator to keep his land always in good heart. Besides, it is less difficult to keep land in a state of fertility than to renovate it after it has been exhausted by careless husbandry. But it is time to bring my desultory speculations to a close.

A. BEATTY.

ADDRESS TO THE HENRICO AGRICULTURAL SOCIETY, BY THE PRESIDENT, THE REV. JESSE H. TURNER. DELIVERED MAY 26, 1841.

(Published by request of the Executive Committee.)

Perhaps I ought, in courtesy, to return my grateful acknowledgments for the distinguished honor of having been appointed to make the address on the present occasion. But really, gentlemen, I must in candor say, that I regard it (all things considered) rather as a task than as an honor. If, however, you can use me to be of any benefit to this infant institution, I hereby tender my services to be employed in any manner you may think proper, provided you do not set me to writing essays. *I cannot write*; for unfortunately I labor under an insuperable inability, both mental and physical, in this respect.

Having premised this, I will observe that, in the course of my reading, I have met with a picture so beautiful and at the same time so appropriate to the present scene, that I cannot, without violence to my feelings, refrain from introducing it here. It is in these words—"That

our sons may be as plants grown up in their youth; that our daughters may be as corner-stones polished after the similitude of a palace; that our garners may be full, affording all manner of store; that our sheep may bring forth thousands and tens of thousands in our streets; that our oxen may be strong to labor; that there be no breaking in nor going out; that there be no complaining in our streets. Happy is that people that is in such a case." If this beautiful picture could be realized, then should we obtain what we all so devoutly wish for—*peace and plenty*.

I will not disguise the fact, gentlemen, that this lovely picture is taken from the Bible; nor is this the only passage, by many thousands, in which the loveliness of rural scenery is depicted, in the same good old book. But from the fact that I have quoted from the Bible, and especially as I wear a black coat, perhaps some of you may think, that I intend to preach a sermon. But be not alarmed, gentlemen. I intend no sermon, nor any other theological lecture of any kind, but a simple, plain address, adapted to this first meeting of our Agricultural and Horticultural Society. Indeed, were I to take a text, there is another that would suit me much better. In former days—those days when temperance societies did not exist, there lived a brother black coat, who had unfortunately contracted a great fondness for the forbidden creature. He continued, however, to exercise the functions of his office, and concluded all his sermons with these emphatic words—"Brethren, don't do as I do, but do as I tell you." Yes! this shall be my text. It suits me exactly, for on it I can preach just such an agricultural sermon as I think proper, and none of you can charge me with departing from my text.

With this motto in view, then, I propose to describe, in a very summary manner, what I conceive to be a well managed, a well regulated farm. In doing this, I intend to use the plainest, the simplest language of which I am capable. I intend to call things, not by their botanical or scientific names, but by the very names that farmers call them; nor will I attempt to appear learned at the expense of being misunderstood. What, then is a well managed farm? Here I am sorry to say that I must depend for my picture, more on fancy than on the reality. If such a farm does actually exist, I have never yet seen it. I am sure you will agree with me, that it exists no where within the limits of our Society. That which comes nearest to it of any I have seen, is a farm in Charles City county, called Weyanoke, the property of the late Fielding Lewis, Esq. where a neatness and system pervaded the whole, which I have seen equalled in no other instance.

But to the answer. A well regulated farm is a portion of land with its enclosures, and buildings, and shelters, and resources for enriching itself, and stock and farming utensils, and a great many other things which I cannot enumerate—all so arranged, and all kept in such order as actually to answer the purpose for which they were intended. Now let us apply this simple rule to any particular case. What use do you wish to make of your land? All will agree that it is to furnish bread and vegetables and all other necessities for the family, together

with as large a surplus as possible to be disposed of at market: and yet this farm must not only maintain its own, but be in a state of continual improvement. When, therefore, I see a farm producing *largely* the above articles—when I see the corn and other crops free from grass, and during their growth exhibiting that dark luxuriant color on which the eye of the experienced farmer dwells with so much delight—and when at harvest, I see the ears large and full and so heavy as to be borne down by their own weight; then I say, that as far as the *land* is concerned, here is a well managed, a well cultivated farm.

Now it is obvious, gentlemen, that this beautiful state of things cannot exist on lands, which are poor by nature or poor by exhaustion, or on which superfluous waters are permitted to stagnate. You never saw, nor will you ever see, the rich luxuriant hue on the impoverished or excessively wet lands. There the growth is slender and the color a sickly yellow. If, therefore, your lands are poor—the remedy is a plain one—enrich them—if they are too wet, drain them. But some one will say—why preach to us about these defects in land? Is none of your land poor? Is none too wet? Ah! you forget my text—I will remind you of it—*Don't do as I do—do as I tell you*.

Again. This farm, however rich and well drained and well tilled, requires enclosures, or all the labor will be lost. And here permit me to remark, that I consider our whole enclosing system as fundamentally wrong. On my small farm I have had to incur an expense of many hundred dollars—certainly more than a thousand, in erecting enclosures. And why all this expense? It is not to restrain my own cattle, for this I could do for less than fifty dollars. It is to prevent the depredations of my neighbor's stock, and my neighbor has to bear a similar heavy expense to protect himself from the depredations of my stock. Now the simple remedy in this case is, to compel every man to restrain his own stock, and this he could do at an expense bearing a very small proportion to what it requires to prevent the ravages of the roaming stock of his neighbors.

And here it is an object of curious inquiry, why has not a remedy so effectual, so obvious, and at the same time so simple, been already employed? The answer is a very plain one. Our whole system of legislation is wrong, and therefore, our whole enclosing system, and road system, and taxation system is wrong also. The evil complained of arises from this—that, the very men on whose shoulders rest nearly the whole support and expense of the government, have very little to do in forming the government. Who is it, for instance, that is sent to fill our legislative hall? Who is it that makes long speeches day after day and time after time about the man in the moon and other subjects of equal importance? Who is it that, in this way, protracts the meetings of our legislature until every body is literally wearied out with them? Who is it that, for their own amusement or their own vanity, will continue to spout forth speech after speech, each of which they know costs the state a thousand dollars or more, and that, too, when every man's mind is fully made up? I

will not, gentlemen, tell you who it is—I will tell you who it is *not*—it is not the plain matter-of-fact farmer. Think you that our honest farmers would spend a whole week, and incur an expense of not less than ten thousand dollars in debating the question, whether they ought to comply with a plain requisition of the Constitution? or that they would squander away our money in settling the federal relations of our country? You all indignantly answer no! Their plain sense would at once dive to the bottom of the matter and suggest the proper remedy.

The truth is, the plain, substantial farmers of our country have not that weight of influence to which they are justly entitled. Except in the spring, when an election is coming on, they are considered as the menials and serfs of the country. Then they are, as if by some magic influence, at once changed into the lords of creation, and those very men, who were all the winter long squandering away their money, are seen bowing, and fawning, and cringing before them as their lords and masters. Here, gentlemen, is an acknowledged great evil, and the remedy is in your hands. Look out among yourselves for some honest, substantial farmer of strong mind and plain good sense, who will not make long and repeated speeches, but will at once see what the good of our country requires to be done, and will immediately do it, and that is the man for us. But is the farmer in reality that poor, degraded thing which many suppose him to be? fit only to drive an ox-cart or to hoe a row of corn? Or does our country itself regard him as this low grovelling creature? Who is it that by his industry and enterprise not only supports himself, but furnishes that large surplus needed by the mechanic, the manufacturer, the merchant, the lawyer, and the whole class of our non-producing population? It is the farmer. Who is it that pays by far the largest proportion of taxes into our treasury, and thus supports our government? It is the farmer. Who is it that controls the elective franchise of our country? It is the farmer. And who is it that buckles on his armor, when his country is invaded, and goes to her rescue? It is again the farmer. If then this be the relative strength of the farmer, why should not his influence be felt? Yes! I do feel a sincere respect for the substantial farmer. He may wear a rough coat, but it conceals a strong body and a noble soul within—he may have a rough hand, but it is a generous one—he may have a brawny arm but it is nerved with strength for his country's glory.

You will, I hope, pardon this digression, when I tell you that I had a distinct object in making it. It is to rouse you, as individuals, and especially as an agricultural society, to the great and growing evils among us, and among these, that which relates to our enclosing system is by no means the least. The remedy is to turn out from our halls of legislation our speech-making members, and to put plain, business farmers in their places. When, therefore, you see it announced in the public prints, that at 12 o'clock, Mr. A. B. commenced his speech, and having continued till 4 o'clock without coming to a conclusion, yielded the floor to a motion to adjourn; mark that man, and be sure the next year "to elect him to stay at home."

The last legislature were in session 112 days, and spent, I am told, \$75,000 of our money. And what did they do? Why I will tell you some of the choice things that they did. They made, in the first place, a great many and very long speeches, very much, no doubt, to their own edification and gratification. That was one very important thing they did. Another was—they made one of the very best governors we have ever had, resign his office—and then, hoping that the people would send them back next winter, and knowing that if they did so, they would need a good deal more of our money, they raised our taxes. And now to crown the whole—as their *chef-d'œuvre*—their highest effort, I will tell you what they did. It is known to most of you, that there went from this society a respectful memorial to the said legislature, to establish a state board of agriculture. And what do you think they did with it? Why they did actually, gentlemen, in their great condescension, give their formal and solemn permit to a certain number of gentlemen, who might think proper, to come to Richmond once every year, at *their own expense*, and call themselves the state board of agriculture!!! Some of us are so stupid as to think, that we might have done the same thing without the solemnity of their permit. Now was not this act alone worth the \$75,000? And I am told that our worthy representative had to use the most strenuous exertions, to get the act passed even in this form.

There is another subject connected with abuses in which we farmers have a deep interest, to which I beg leave briefly to call your attention. This relates to the extremely deranged state of our currency at the present time. And here I am fully aware that this, together with almost every subject, has been dragged into that political strife, which has so much disturbed our country for a considerable time past. But I wish it to be distinctly understood, that I shall treat this subject not as a politician, but as a plain farmer. On this day—a day in our society sacred to agriculture and its pleasures, as our own Jefferson has expressed it—"We are all federalists—all republicans." I do most cordially approve of that article in our constitution, which prohibits the agitation of any political subject at any of our meetings. I do not aspire to the honor of a politician at any time; much less would I do or say any thing to disturb the harmony of this joyous scene. I, therefore, on election days, and on other suitable occasions, I declare and declare plainly who and what I am, I shall studiously keep it out of view on this occasion. To-day I am a farmer, but as a farmer, I have a deep interest in the currency of the country.

My attention was recently called to this subject by an incident which I beg leave to detail. I lately had occasion to procure a draft to pay for some northern stock. It was not bank stock, gentlemen, but hog stock, Berkshire hog stock. I went to my bank to get it—I call that my bank where I do my little business. The proper officer informed me that I could not get it; but added, try at the other banks, and if you fail there, I will accommodate you. The word *accommodate* made a strong impression upon me, and I went away congratulating myself in having secured the kindness of the man of the

bank. My application at the other banks was a fruitless one: so I came back again, and the draft was made out in due form and handed to me for my inspection. But what do you think was the character of it? It was to be paid not in specie, but in current notes, and so expressed on the very face of it. Now let it be borne in mind that I paid for it in the very same article—current notes—and that too at a premium of 4½ per cent. Now I can readily understand why a silver dollar should be worth more, under some circumstances, than a paper dollar; but I cannot understand why a current note in New York, neither of which will command any pay, should be worth more than a current note in Richmond. Merchants may understand this, but I cannot. The fact is, that on this little transaction, amounting to only \$250, I lost \$11 25, and the bank made it—and this they call accommodation. The truth is, it took one of my best loads of hay to pay for this accommodation. A few more such accommodations would reduce me to the same condition in which the banks are—they would ruin me. Now here is a grievance—a great and palpable grievance, which has taken \$11 25 from the pocket of me, an obscure farmer, not engaged in any trade, by which I might *cheat* as much from some other person, and it has gone into the coffers of one of the great moneyed institutions of our state. Nor is this the only case in which we lose. We lose constantly in every instance in which a depreciated currency is concerned. To make this plain, I will state a case which occurs every day and every hour in the day. The farmer brings his corn, his wheat, his tobacco, and what not, to market, and sells it and gets his pay in bank notes: and if the price be a good one, he feels very well satisfied. But why is he satisfied? Because with these same notes, he goes to the merchant and there buys a coat, for himself, and a gown for his wife, and a fine bonnet with a pretty ribband on it for his daughter, and perhaps a gun for his son. Now all this is well enough, till we examine into it a little more carefully, and when we do, we shall find that the merchant paid for these things in a depreciated currency—consequently a loss has been sustained. And the question is, on whom will it fall? Now, every body acquainted with merchants at all, knows that they are not such fools as to let it come upon them. Of course it falls on the consumer. The coat, the gown, the bonnet, and the gun, turn out, therefore, to be a losing business.

Now here is a grievance, a great and sore grievance—and what is the remedy? I remember some years ago, whilst the United States Bank was in existence, I had occasion to transmit some money from this point to Cincinnati, in Ohio. I went to the branch bank in this city and readily obtained a draft for the sum wanted, for which I paid 25 cents on the \$100. Now let it be understood, that I have nothing to do with that bank in a political point of view. Whether such an institution is constitutional or not, I pretend not to say. At the same time, when Washington and Madison, and the Supreme Court of the United States say that it is constitutional, I must think that it comes pretty near to it. But this much I can say, I found that bank a very convenient thing. You may stigmatize it as the mon-

ster—you may call it Biddle's bank, or what you please; but the bank which equalizes the currency, the bank which makes my dollar here equal to another man's dollar in any other place all over the world, is the bank for farmers. If this bank had been in existence, I should not have lost \$11 25 on my hog stock.\*

\* Mr. Turner here has fallen into a very common error. It was not because the bank he refers to was a *United States bank*, but because it was then a *specie-paying bank*, that it could sell exchange on another specie-paying bank so low. If the United States Bank at that time had paid only in irredeemable paper, as the Virginia banks have long done and do now, both the depreciation of its notes and the price of exchange for specie would have been *nearly* as great. And if our state banks now, and had all along, honestly and fully paid specie, the price of exchange between the most remote cities of the union would be (without the aid or existence of a United States' bank) so small as not to be worth consideration. The business of a publisher of a periodical, having circulation among many distant and widely scattered subscribers, probably suffers more than any other by the depreciation of paper money; and of the evil and loss we have ample and almost ruinous experience. Yet if the state banks merely paid specie, we should never lose more than 25 cents discount on any \$5 note sent from the remotest parts. The late United States Bank barely missed stopping payment in 1819 and 1825—and both the first and the second national banks would certainly have stopped within three years, if their charters had not ended sooner. And in that case, Mr. Turner would have found their notes just as worthless as he, most justly and truly, estimates the value of the dishonored notes of our irresponsible and lawless state banks.

Like Mr. Turner, we speak of a United States Bank merely in reference to the claim of its being a convenience and facility to the community, and especially to the agricultural community. We here consider the institution merely as bearing on agricultural interests. We will not even name a political objection, nor allude to constitutional difficulties. And, if omitting all these latter considerations, then there is one ground of preference which we entertain and readily admit for a United States bank, to the state banks operating without any such national or controlling institution. Our preference in this case is exactly that felt by Baillie Macwhebbie for paying a heavy black-mail to the highland chieftain, Fergus McIvor, rather than be exposed to the more continually harassing and unregulated petty pilferings of the numerous caterans and thieves under his control. If the only choice of the agricultural interest is to be either at the mercy of a thousand fraudulent and plundering state banks, privileged by law and custom to cheat and rob almost at discretion, and without penalty, or to the same army of petty thieves of corporations, partially restrained and controlled by a supreme chief of banking robbers, in the character of a United States bank, then we

I have another strong objection to banks, as at present conducted. It seems to me that our state legislature, together with a large portion of our citizens, are completely sold to them. It certainly argues very badly for the morality of an individual to refuse to pay his debts, and for a great moneyed institution to do the same thing is a much greater enormity. Now let the banks do what they may, our legislature and a great portion of the people are ready to sustain them in it. Some time ago, our banks got into difficulty, and to use their own language, suspended specie payments, (I have often wondered why they use the term, *specie* payments, for it is well known that no other payment is worth a button.) Well, they suspended, that is, in plain English, they refused to pay their debts. Now suppose that I or one of you, gentlemen, should do the same thing! Why the strong arm of the law would immediately take hold of us and compel us, and with the loss of property, we should lose our characters also. But what is the fact in the case of the banks? Why the legislature is immediately convened, and their illegal act is made a legal one. At length, after taking their own time for it, they undertake to resume. And what sort of a resumption is it? I call it a mere mockery. In one short month, taking care in the mean time to place their notes at such distant points, that nobody could avail themselves of the promised payment, they suspend again. And the general wish, so far as I know, is that their present suspension may be a final one.

Here then, gentlemen, is a most formidable array of evils under which we farmers, that is, we the *people*, labor. We elect men and send them to the legislature to do our business; and instead of doing it, they get engaged in squabbles of party strife; and there make long speeches, and there squander away our money, until tired of the game, they break up and go home, and have the impudence to offer again; and we have no more sense than to elect many of them. We incorporate certain moneyed institutions, and give them certain privileges, in consideration of which, we expect them to study our convenience, and to give us a sound currency, and to furnish the means by which we may transmit our funds from one point to another, and that without loss. But what is the fact? Instead of a sound currency, they give us a dishonored currency, and if we get any draft at all we get it with the loss of our bread. Now what is the remedy for these great and sore evils? The best and safest cure, as I think, is in agricultural societies. The plan is simply this. Let there be an agricultural society in every county in the state: let one feeling, one spirit pervade the whole: let there be a close and intimate correspondence kept up between all the parts: let us, by means of our orators and missionaries, keep up a constant excitement on this subject; and then, my word for it, *our servants* will no longer aspire to be our mas-

would not hesitate to prefer the latter infliction to the former. But, in the mean time, and until all hope of relief or remedy has entirely vanished, we individually will struggle to defend our property and rights from the depredations of both the greater and the smaller plunderers.—Ed. F. R.

ters—and when we depute members of the Legislature to do our business, they will do it—and when we incorporate banks to study our convenience, they will do it also. The servant is very apt to become lazy or insolent, unless the eye of the master is kept upon him. And this, I would observe, is the very place to commence this thing. We occupy the metropolis of the state and its neighborhood, and our local position gives us a commanding influence, which we are criminal if we fail to improve.

(To be continued.)

#### HUSSEY'S REAPER.

To the Editor of the *Farmers' Register*.

Agreeably to the arrangement made between Mr. Hussey and yourself, with a view of testing the merits of his reaping machines fully in a long harvest, he made his appearance here on the 27th ult., having been preceded some days by two of his reapers, one of either sort; and having received due notice of the probable time of our commencing that interesting operation to the farmer, the securing of our crop of wheat. He accordingly put them in operation the next day, but from the unskillfulness of the hands, and from the horses not being accustomed to the work, and probably from the greater friction in using new machines, the work was so badly done, and the loss of time so great, that I more than once regretted having given my consent to make trial of them here. It is proper to observe that the first day the experiment was made on ten-foot beds, where the furrows were quite deep; and in crossing the beds the horses were a good deal jostled, and in going with the beds, or diagonally across them, as was done over part of the ground, the wheels occasionally would run into the furrows, and in both cases the machines were prevented from operating successfully. The next day they continued to work on the same unfavorable ground, and though there was a manifest improvement in the work done, and in the quantity of it, I was still very much dissatisfied. The third day, however, we removed them to a more favorable site, where the beds were wide, the furrows shallow, and the wheat heavy, and I very soon became convinced that Mr. Hussey's reaper did not deserve to be classed with the humbugs of the day. By this time the horses and hands employed had become better trained, and the work was beautifully done—better indeed than I ever saw done by the most expert cradler and binder, "with every appliance and means to boot" to enable them to do the work well. Less wheat was left on the ground traversed by the machines, either standing or cut, than I ever observed in any wheat field before.

I wish I could speak as strongly in favor of the reaper as a time-saving machine, but the truth obliges me to say that I cannot. Still I think that it will save time; but the question is, how much? A very difficult question it is, too, and by no means so easily solved as might at the first glance be imagined. Indeed so much depends on the locality, the length of the rows and the heaviness of the crop, (the reaper operating to most advantage in heavy wheat,) that the time saved is con-



stantly varying; and to approximate the truth, therefore, is as much as can be expected. Something, indeed, a good deal, depends upon the fact, whether good cradlers have to be stopped in order to run the machine; good policy, however, would always suggest the propriety of stopping the worst.

It is not enough to ascertain the number of binders required to run the machine, in order to determine precisely the time saved. Say 8 hands are required for this purpose in heavy wheat, and where the rows are pretty long, and such situations are the most favorable to the reaper, and six where the wheat is lightest and the rows short, and a good deal of time consequently lost in turning. Are six cradlers saved in the former case, and four in the latter, estimating the driver and raker, who ought to be good and efficient hands, as of equal value with cradlers? Certainly not; and for this reason. The reaper cannot be started as long as there is any dew on the wheat in the morning, nor can it operate after much has fallen in the evening. At such times the hands that attend the machine have to be employed in some other way; and moving from one kind of work to another is always attended with more or less loss of time. Nor is this all. In shocking wheat after the machine, some loss of time is also incurred. Where we use the cradles, the binders follow immediately behind them, and then come the pickers-up, followed by the shockers, and the whole work goes on together. The reaper, however, when operating in long rows, as it must do to work to advantage, scatters the work so much, leaving it in long narrow strings, that shockers cannot find constant employment in following it. We have found it necessary, therefore, to stop a part of our cradles, once a day, in order to bring up the shocking after the machines, which certainly occasions some loss of time. Still I think on the whole that the securing of our crop has been somewhat expedited by the use of these machines; and if binders could have been hired to operate them, without stopping the cradles for the purpose, our harvest would have been very materially shortened; and the loss of wheat would unquestionably have been much less.

It would add greatly to the value of these machines, if the ingenious inventor, Mr. Hussey, could devise some way to make them cut damp straw; so that they might be kept at work all day. Whatever Mr. Hussey has not accomplished, however, is, I am sure, owing to the intrinsic difficulty of making the improvement desired; for the wonder with me is not that he has achieved no more, but that he has done so much.

The reaper compares most advantageously with cradles in cutting heavy wheat that stands well, cutting it quite as rapidly as it would a lighter crop, which the cradles would not do; or in cutting fallow wheat that inclines altogether one way. The fallow wheat, however, must be cut the way it inclines, the knife going under it, and it is laid beautifully, as it falls from the machine, for the binders; but the machine must go back without cutting. I am not of opinion that the reaper will answer in all situations, or will even supersede the use of the cradle altogether; but I incline to think that it may be used to great advantage in securing parts of almost every large crop; at least on level land.

After timing these machines repeatedly, I

have not been as yet able to get either of them to cut more than an acre per hour, and, by the way, that is quite expeditious work in heavy wheat. Before trying the reaper, I had supposed that good scythemmen would average more than 2 acres a day in good wheat, but I am now convinced that this is quite as much as can be done. My overseer, Mr. Adams, who superintended the machines, and is quite a judicious man, entertains the belief that  $1\frac{1}{2}$  acres might be accomplished by the reaper in an hour, with fast horses and superior driving. It is probable, too, that the experience of another season might enable us to effect more than we have yet done. But still I doubt if an acre and a half an hour can ever be counted on for many consecutive hours.

An observant gentleman of Charles City, and a practical farmer too, who has one of these machines which he worked last year, informed me recently that it would cut down sixteen acres of wheat a day, or would do the work of eight cradles. The testimony of this gentleman is every way entitled to credit, and justice to Mr. Hussey seems to require that it should be mentioned. I presume of course that some allowance was made for the time lost in the morning and evening, when the straw was damp.

In removing the machines, we employed for the most part the same horses and hands. When they can be conveniently changed, so as to lose no time in feeding, the amount of work will no doubt be much greater; as full two hours are allowed at dinner time in harvest. When this plan is adopted, the horses and hands intended to work the latter half of the day, must be fed only.

I have heretofore mentioned that the two machines sent me by Mr. Hussey are of different kinds. The one has two large wheels and the other one, and I give a decided preference to the former. It is an easier draught and performs better in every respect.

Before taking leave of the subject, I would respectfully suggest to those who are making trial of these machines for the first time, that they ought not to be disheartened, if they fail to perform very perfectly for the first day or two. Whatever difference of opinion may exist in regard to their saving time, there certainly can be none as to the very superior style, in which they save wheat, when properly managed.

With regard to the durability of these machines, I can say no more than that neither gave out during our harvest, and that they are to appearance quite strong.

WM. B. HARRISON.

Brandon, July 12th, 1841.

#### ANOTHER TRIAL OF THE REAPING MACHINE.

[In addition to the foregoing statement, we are gratified to add the following, from Robert B. Bolling, esq., who, at our request, and through our arrangement with Mr. Hussey, made a separate trial on his Sandy Point estate. The intention to make this trial would have been announced at the same time with that of Mr. Harrison (in No. 5) but that the arrangement had not then been com-



pleted. Both these trials were undertaken at our request, and we are confident that both the individuals used every care to have full and fair trials made, and the facts and the results accurately noted. It is unnecessary to add that no where could such confidence be better placed.—  
ED. FAR. REG.]

To the Editor of the Farmers' Register.

*Sandy Point, July 23d, 1841.*

The wheat reaping machine of Mr. Obed Hussey, which the inventor was to accompany and put into operation, did not, owing to his previous engagement, reach me until I had nearly completed my harvest. I had not therefore as good an opportunity as I desired to test its efficiency, and to ascertain with accuracy the actual amount of manual labor that the machine would be equal to. From the very short trial which I made of it, however, I feel satisfied that the principle is a good one, and may be successfully applied to the object intended, and that the machine is destined, when the inventor shall have better perfected its mechanical arrangements, which he can with his greater experience easily do, to be an invaluable acquisition to the farmers of the wheat-growing region of country. With three mules, a man to drive and one on the machine to rake the wheat from the platform upon which, as it is cut, it falls, we estimated that rather more than one acre per hour was reaped. By Mr. Hussey's calculation the machine must cut one acre, in every two miles which it travels through the wheat; 15 acres therefore by this calculation may be reaped in a day with one machine, pulled by three mules with two men only to drive and rake, by travelling thirty miles, a distance not too great on level land, through large fields, where there would be but few turns. The cutting of the machine where the wheat was rankest was the best, leaving not a straw scarcely standing after it, and rendering gleanings entirely unnecessary. The wheat for the "pickers up," or binders, was deposited more evenly and in much larger quantities together, than after the cradle, and with these advantages to the pickers up, eight were not always able, when the wheat was rank and abundant, to gather, tie and remove the sheaves from the track of the machine, as it passed around the square. The machine does not cut well early in the morning, when the wheat is moist; it cuts best where and when a cradler would do least—in rank wheat and in the hottest period of the day. I have concluded to procure two for the next harvest, satisfied that much manual labor thereby may be saved, at a critical and important season to the farmer, when labor is always scarce, and especially on the lower James River at that time. I am, very respectfully,  
yours, &c. R. B. BOLLING.

#### GARLIC.

From the Farmers' Cabinet.

Mr. Editor—I have been a careful reader of your valuable and interesting paper for some time past, and have been much gratified to find therein the productions of so many able writers on many subjects of much importance; but there is one

subject on which I do not recollect ever having seen any thing published in the Cabinet. I mean in relation to that noxious plant, *garlic*, as to the best mode of conducting a rotation of crops on a garlicky farm, so as to be the most profitable to the agriculturist, and at the same time keeping the growth of it under, in such a manner as to prevent one being annoyed with it in the grain.

I will here mention a system which I have found to be the best calculated to retard its growth: it is, to plough it under early in the spring, thereby preventing it from growing during the following summer, which causes much of it to decay; and I am inclined to think that all that had come to maturity dies, by being ploughed under at that season, but inasmuch as the earth is filled with its seeds, there is great difficulty in exterminating it entirely. The best course, then, is to plough it under late in the fall or early in the spring, and cultivate the land in corn the following summer; then plough it again the following spring, and seed it with oats or any other summer crop; manure it in the fall, and seed it with wheat, and in the spring following sow clover on it. This mode enables me to realize a crop of corn, a crop of oats, a crop of wheat, and a crop of clover, all without garlic; and by letting the land remain only one year in clover, I generally can have another crop of wheat without much garlic; but afterwards it generally comes thick again. Now, as my principal object in view is, to elicit information on the best mode to exterminate it *entirely*, I conclude by hoping that some of your able correspondents will oblige us with instructions how to cultivate garlicky lands so as to *exterminate* the noxious plant, or to keep its growth under, and enable us to cultivate our lands profitably. A PRACTICAL FARMER.

#### LOCALITY OF THE CANKER WORM.

From the New Genesee Farmer.

The Nashville Agriculturist (as quoted in an exchange paper) recommends taking up the earth round fruit trees to the depth of six or eight inches, and to the distance of eight or ten inches, for the purpose of burning it, in order "to destroy the germ of the canker worm." Is the canker worm an inhabitant of Tennessee? Perhaps some of our readers can inform us in regard to this particular; and also the boundaries of that district on which the genuine canker worm (*Phalena ver-nata*) is found.

Deane, in his New England Farmer or Geographical Dictionary, says, "It is not less than about fifty years since this insect began its depredations in New England, in the parts which had been longest cultivated. But perhaps there is some reason to hope that Providence is about to extirpate them: for a little bird has lately made its appearance in some parts of the country, which feeds upon the canker worms. Should these birds have rapid increase, the insect will be thinned, so as to be less formidable, if not wholly destroyed."

The second edition of that work was issued in 1797, "soon after the first," and perhaps we may set the time of their first appearance about one hundred years ago. It will be safe to conclude they were not newly created about that time, however; and we may ask whence they came?

or what other tree supplied them with food before that period?

The little bird was doubtless the cedar bird—one of the greatest marauders of our land; but having no canker worms for him to feed on in this district, we should be glad to send him where he might find useful employment.

For the Farmers' Register.

**AGRICULTURAL STATISTICS—FURNISHED IN CONNEXION WITH THE LATE CENSUS OF THE UNITED STATES.**

A document has been published, as emanating from an official source, purporting to exhibit the agricultural statistics of the United States, which is so grossly and palpably erroneous as to reflect great discredit on the department that allowed it to go before the public. It has been already noticed in the Petersburg Intelligencer, and that it may not mislead those who may be in the habit of adopting official statements without examination, we will point out some of the grossest blunders which the table exhibits.

The article of hemp and flax is among the most conspicuous.

New Hampshire is stated to produce	53,040 tons.
Massachusetts - - - - -	23,132 "
New Jersey - - - - -	33,170 "
Pennsylvania - - - - -	170,760 "
Virginia - - - - -	92,123 "
Ohio - - - - -	252,520 "
Tennessee - - - - -	45,053 "
Missouri - - - - -	20,071 "
Indiana - - - - -	97,657 "
Illinois - - - - -	50,326 "

And the total product of the United States is put down at 843,049 tons! and 148,224 pounds. It may be safely questioned whether the whole world produces any thing near this quantity, and whether the United States produces more than the smallest quantity above enumerated. It must be observed that Kentucky, the only state that grows much hemp, is omitted.

Hay is another of the incredible products stated.	
New York is stated to produce	3,160,916 tons.
Pennsylvania - - - - -	1,199,963 "
Ohio - - - - -	1,024,803 "
Maine - - - - -	691,058 "
Vermont - - - - -	734,047 "
Massachusetts - - - - -	569,425 "
Aggregate, 9,641,225 tons! Is this probable, or possible?	

Of tobacco Tennessee is stated to produce 26,542,448 pounds, and Virginia only 14,157,841 pounds, or about 11,000 hhds., when her annual inspections are 45,000 to 58,000 hhds., in which, we admit, is included a considerable portion grown in North Carolina. The total product of tobacco is stated at 78,070,803 pounds, which is much below the mark, as the inspections of Virginia in 1840 (when the census was taken) were 58,000 hhds., weighing nearly or quite 78,000,000 lbs., exclusive of a large quantity manufactured and not inspected; the inspection at New Orleans, is 41,000 hhds., (but we admit that Kentucky has made no return,) and in Baltimore, 40,000 hhds.

Virginia is said to produce 10,767,451 lbs. of cotton, equal to about 30,000 bales, or more than

double her actual product, for a large portion of the 25,000 bales she receives is grown in North Carolina. In the report it is noted that some of the returns are in seed, others in ginned cotton, but as the quantity of each is not distinguished, the table, if otherwise correct, is valueless. The aggregate of cotton is 1,064,660,785 lbs., which, at an average of 400 lbs. per bale, is equal to 2,661,400 bales, or 461,000 bales more than the largest crop ever made, and 861,000 more than a full average crop.

The whole quantity of sugar made in the United States, according to this extraordinary document, is 281,265,116 lbs.! of which New York produced 10,093,991 lbs. *on paper!* and Louisiana 249,937,720 lbs.! or, in fewer figures, 250,000 hhds., or 200,000 hhds. more than the planters brought to market.

Louisiana is the only state in the table, that produces any considerable quantity of pitch, tar, turpentine and rosin, say 12,233 barrels! We presume they are produced from some other tree than the pine. Total of the United States 31,689 barrels. North Carolina has omitted to furnish her claim to this, (her great staple,) or to any other product; so have Kentucky, Michigan and Florida.

Of silk (cocoons) the table shows a product of 328,482 lbs.; of which Pennsylvania claims 278,939. The error in this item is too obvious to require comment.

Having noticed the most egregious errors, we will close with a summary of the other principal products, and leave the reader to judge of their accuracy; some of them are not over-estimated.

Bushels of wheat - - - - -	76,174,849
" Indian corn - - - - -	297,855,658
" Oats - - - - -	106,375,192
" Potatoes - - - - -	101,981,439
" Rye - - - - -	17,037,600
" Buckwheat, - - - - -	6,952,326
" Barley - - - - -	3,848,140
Number of horses and mules - - -	3,489,150
" Neat cattle - - - - -	13,438,383
" Sheep - - - - -	19,085,962
" Swine - - - - -	20,745,893
Value of poultry - - - - -	\$10,992,610
Pounds of wool - - - - -	26,939,340
Products of dairy - - - - -	23,959,581
Products of orchard - - - - -	7,259,078
Gallons of wine - - - - -	316,628
Value of lumber - - - - -	10,955,646

The table is at least a bad basis on which to found calculations. What dependence can be placed on the census of population emanating from the same sources? X.

**ON INDICATING AND DESCRIBING GRASSES.**

To the Editor of the Farmers' Register.

Hillsborough, N. C., June 16th, 1841.

Dear sir—The suggestion of my excellent friend, Dr. Darlington, seems to me to present the greatest advantages for securing the end which we have lately discussed. A specimen of a plant is certainly better than the best description which can be written for determining the true name of a species. It is also better than a plate or figure, which is proposed by Mr. Lewis, in the Kentucky

Farmer. For unless the plates were executed with the minutest precision and colored like nature, a person unacquainted with botany would find it difficult sometimes to determine to which of two or three similar species his plant is to be referred. Plates prepared with the requisite accuracy would be too expensive for general use, while coarse uncolored figures would be of little service.

And I am disposed to believe that every person who has interest enough in the matter to purchase a very costly work, would not hesitate to take the trouble of collecting the known grasses in his vicinity and get them labelled properly by means of some central herbarium to which he can have access. After that, his doubts are at an end.

My friend, Prof. Short, I doubt not, will very willingly label plants for Mr. Stevenson, and Dr. Darlington for Mr. Skinner. I will with pleasure perform that service for you, and I presume every editor of an agricultural paper in the country will find no difficulty in securing the aid of some good botanist to give authentic names to his collection of plants. And when this is done, each botanist can report the scientific and vulgar names of the grasses of his district in the agricultural paper, which can be copied into others. The knowledge of a good part of the country on this subject can thus be gathered up in the least troublesome manner, and if necessary be subsequently condensed and arranged by some competent hand.

Dr. Darlington is certainly right in the matter of learning the technical names of grasses. They sound uncouth to an ear accustomed only to the English, but they make but little if any heavier draught upon the memory than any other new words. Farmers, I find, have learned to utter *morus multicaulis* with all the fluency of a botanist.

You and your Virginia correspondents are very familiar with such terms as "wire-grass," "hen-grass," and the like, but they are sealed terms to me. I wish you would collect a specimen of each of your grasses that has a name, for me, that I may gratify my curiosity about them. I presume, however, from the interest you have manifested in the elucidation of these obscurities, that you have already commenced your collection.

I intend to further your project by adding to your collection from my own stock some specimens from other sections of the country which may not be found in Virginia. Very respectfully,  
M. A. CURTIS.

For the Farmers' Register.

#### WILD ONION.

To exterminate this vile pest from our wheat fields is a great desideratum. All facts or observations connected therewith cannot fail to be interesting to the agricultural community. The following communication is made, not as warranting any definite conclusion, but more to draw forth any further observations which others may have made.

In 1839 I had three small lots very much infested with wild onions. No. 1, then in clover, not grazed, was fallowed in the fall of 1839, and produced a fair crop of wheat in 1840, but containing

so many onions that the crop was hardly saleable. After the wheat was cut off, I ploughed the land and sowed peas. In the fall of 1840 the peas were turned under, and wheat again sown about October 11th. Among the peas not an onion was to be seen, and I was in hopes the two-ploughings (for the peas, and then to sow wheat,) had effectually eradicated the onions. The wheat crop on this lot was again this year very good, but as much mixed with onions as last year.

Lot No. 2 was in wheat in 1839, and produced almost as much onion as wheat. In 1840 the land was put in corn. The onions that fall started by thousands. Early in November the land was ploughed, and wheat sown on the 10th. The wheat this year is better than I expected, and scarcely an onion to be seen in it.

Lot No. 3, at rest in 1839, was put in corn in 1840. The onions began to grow in great quantities on this, as on lot No. 2, in the fall. When ploughing it in November for wheat, my foreman remarked to me that it was useless to put that piece of land in wheat, for it had never brought any thing but onions. The wheat was sown on November 10th. The crop this year was good, and very little onion in it.

I infer that to rid your wheat of onions in land infested with them, you must wait, in the fall, till they have started, and then plough or harrow, so as to destroy the growth of young onions before sowing the wheat. Whether such a course often repeated will clear the land itself of onions, or whether I refer the effect to its proper cause, further observation must determine.

A YOUNG FARMER.

#### FAILING TO GIVE LITERARY CREDITS.

The last Boston Cultivator, after saying something complimentary to our journal, adds the following indirect but not the less pointed censure:

"On looking at the June number we noticed a well written article in it 'On hiving bees,' and were making up our mind to copy it, but on reading it through we discovered it to be an exact copy of our own article on the subject, published in the Cultivator in May last."

The fact of omission to credit the extract to the Boston Cultivator is truly charged. The only excuse is, that the omission was not designed, nor did we know of its having been made until thus informed. But though thus having failed, through inadvertence or carelessness, to give the credit due to the Cultivator, the article itself will clearly show that we did not in any way assume the credit of its origin. It not only has none of the customary marks of an original article, but further is referred to in the table of contents under the head of "Selections." Every editor and publisher must know, even if all others do not make the proper allowances, that it is next to impossible, in the hurry of business, and still more because of the previous errors of other intervening publica-

tions, to entirely avoid omissions or errors in regard to credits of the authorship of selections. In the long course of our editorship, it is possible that many such charges might be as justly brought as the above; but if so, the grounds of all are as yet unsuspected by us. And we can lay claim at least to this merit, that none are more solicitous or careful to avoid such offences; and we believe that no publication is, in fact, less offending on this score.—ED. FAR. REG.

THE COST OF TRANSFERRING THE MONEY OF THE GOVERNMENT—THE COST OF EXCHANGE—AND THE AGENCY OF A NATIONAL BANK FOR LESSENING BOTH.

For the Farmers' Register.

Of the many fallacies and popular delusions which sustain the paper-money system of this country, there is none more false and absurd than the asserted great difficulty of transferring funds, and especially the revenue of the government, if *without* the aid and agency of a national bank. It is claimed by the advocates of the paper system, and scarcely denied by most of its opposers, that, if considered apart from all constitutional or political objections, the establishment of a national bank would serve admirably as an *economical* expedient, or money-saving agent of the government; and that if dispensed with, because of objections on political or other grounds, that any substituted agency for transferring the revenue would be very far more costly than that of a United States bank. We assume opposite grounds; and will here submit some of the reasons for that assumption. We shall here have regard merely to the *economical question*, or that which deeply concerns the agricultural and general pecuniary interests of the country. The *political question*, or the bearing of a national bank on political rights and interests, however important, is not a proper subject for discussion in an agricultural journal, and therefore will not be touched.

The New York Journal of Commerce, a paper of deservedly high authority on all matters of trade and mercantile affairs, lately asserted that the necessary transfers of all the revenue of the United States could be effected, promptly, and securely, upon contract and as a mere business arrangement, for a commission of one-quarter of one per cent. on the amount to be transferred. The ground of such a supposed arrangement was to be, that the revenue was to be received by the agent at the points where collected, in specie, and to be placed by the agent, in specie, at such other points as should be required for the disbursements or the demands of the government. Thus, if the portion of the annual revenue *requiring to be transferred* amounted to 24 millions of dollars, the whole cost of the transference would be only \$60,000.

This positive declaration by the editors of the Journal of Commerce has not yet been questioned, that we have heard of, by any one, on the ground that the *commercial facts* implied were not true. Another paper, which seems to yield that point, has objected to such agency, upon other grounds,

which has brought forth from the Journal of Commerce the following additional remarks:

"For the commission above named [one quarter of one per cent.,] we will undertake to arrange the whole matter with institutions of the first responsibility, so that the money of the government shall be perfectly secure, and so that the Treasurer at Washington shall have no other trouble in the business, than to make up a weekly statement of receipts and of orders for disbursements, and the money shall be accepted wherever it may have been paid in, and paid out wherever it is expended. There is a system of exchanges now in operation all over the United States, which proves that the thing can be done, and that whoever does it would make a fortune by it. In fact, we have no doubt that the arrangement could be made without the allowance of any commission whatever. Persons at a distance may not readily credit this, after all that they have heard of the disordered state of the exchanges, and the necessity of some contrivance to regulate them. But a closer examination will show, that if Congress would, by a bankrupt law, brush off the bankrupt or dishonest currency factories of the south and west, and so correct the *currency*, the exchanges would be seen to be in a state of good regulation. At any rate, we hold ourselves bound to arrange a fiscal agent on the plan proposed above, on receiving thirty days' notice."

We have no reason to distrust the estimate of cost made above, as being ample for the profit of the agent. But suppose for the sake of argument, the cost to be double as much—quadruple—or even multiplied ten-fold—the cost would still be very far *cheaper* than the agency, or even attempting to resort to the agency, of a national bank. Even if the cost of transferring 24 millions of dollars were ten times as much as the quarter per cent, which is deemed sufficient, that enormously increased charge would be but \$600,000 a year; and that sum is less than the mere pecuniary cost to government of only discussing the bank question, and other questions proceeding from that fertile source of debate, for the last 10 years. If, by paying even one million of dollars annually, the government could defray all the cost, direct and indirect, of the bank and bank questions, it would be a better bargain than will ever be made by the government in regard to banking. The present extra session of congress is entirely chargeable to the bank question, and its expense will not fall short of half a million. The same question has served to add perhaps twice as much to every year's cost of recent legislation and government. But that is scarcely a tithe of the whole cost to the people. Let the amount be counted of the destruction of value and transference of property by fluctuating prices of currency—of swindling stockjobbing operations—of mad speculation—and changes of habits and corruption of morals—all caused by the great bank question, and even 20 per cent. of the revenue of the government would not be a compensation for the enormous injury to the wealth, morals and happiness of the people. We, therefore, would prefer to pay any possible proper charge for the transferring the revenue of government, as an ordinary business transaction, rather than suffer all the evils incurred by the agency, or vain efforts

to procure the agency, of a national bank for that purpose.

In this tangled controversy on the expediency of a national bank for furnishing a common currency, and for equalizing exchanges, it seems to be taken for granted that a common circulating medium is essential to that end. This is not so. The currency (paper) of the United States, whether when in good or in bad repute, was confined to this country, and so is the proper currency of Great Britain to its own territory. Unless by accident, and in some rare and trivial cases of exception, no bank-note of either country ever found its way to the other. And as paper constituted the great body of the currency of each, even when the paper was convertible to specie, there was no currency in common between these two great commercial countries, whose regular commercial business is scarcely surpassed by that of any on the globe. Yet this absence of any common currency has not been the slightest obstacle to the extended and most beneficial exchange of commodities, and transference of funds. And it is as easy for an American to make a purchase, or a payment in England, as in any remote city of his own country when our currency was deemed in the best condition.

Now if there could exist, by possibility, and had long existed, a paper-issuing bank, or paper currency common to these two countries, so that this paper money had been used for transmission instead of drafts or bills of exchange, it would be now as general and fixed a popular belief, as it is in regard to Virginia and New York, that no trade could be beneficially carried on, except at immense loss in exchange, between the United States and England, without such common paper currency, or a joint and common bank of issue. Extend the application of the doctrine, and there would be found as great commercial necessity for a joint bank for all Europe and all America—indeed for Asia, Africa, Australia, or for the whole commercial world. Yet we all know the general fact that trade is carried on perfectly well without any such joint banking establishment or common currency. And none know so well the falsehood of the assertion of the absolute necessity of a common paper currency, as the bank men and commercial men, who use it as an argument to urge the establishment of a national bank, which they want for other and selfish purposes. Ignorant politicians, and their ignorant and blind followers, may indeed believe this doctrine. But intelligent merchants and money dealers have more knowledge than to believe what they aim to make the politicians and the people believe in this respect.

The great operations of trade between different countries, and between different parts of the same great country, are conducted by *exchanges of commodities*, and not by payments and transmissions of money, whether of paper or of specie, for the amounts purchased and sold. Exchanges of products between this country and England might take place to the amount of 100,000,000 annually furnished by each country, and if the total amounts were equal, not a dollar need be transmitted to make payment. The American who sold tobacco or cotton in England, would receive (in preference) not money, but a draft on England, which he would sell at a premium to some one who wished to purchase or pay for goods in Eng-

land. The operation is so simple and clear as to need no further explanation. Extend the application to the whole trade between the two countries, and the result is, that, even if each individual sale were made for cash and paid for in money, there would be no need of transmitting any money across the Atlantic; as it would be more profitable for the latter class to purchase such foreign funds or drafts, rather than to transmit money, no matter whether there existed a specie or a paper currency, or uniform currency of either.

But it is true that a precise equality of sales and purchases of the United States and England in any one year would not be possible. But that does not affect the principle of the position. The *balances* only would have to be paid for in specie, between countries the least connected in trade; and these balances will be very small compared to the whole amount of exchanged products. But between countries closely connected in trade, the balance of one year would generally be settled in the next year's transactions, and be almost always discharged in commodities instead of money.

The generally prevailing opinions of the necessity, and of the mode, of transferring the revenue of the United States are as erroneous as those upon trade between different countries. The whole revenue of the government has not to be brought to one place, thence to be sent to every place of disbursement. As in the case just stated of trade, it is only the *balances* that require to be moved; and not always even the balances. Under the present system of indirect taxation by duties on importations, the greater part of the revenue will be paid in the city of New York. All the disbursements of government which are made there, or can be as conveniently made there, will of course absorb so much of the revenue, and save all charge for transferring the amount. But this is but a very small proportion of what may be so paid. On account of the city of New York being the great commercial capital and mart, it will follow that money there will be at least as valuable to all persons who have to make purchases, as at any other place in the union, and generally more so. Consequently, if government has to pay a sum, whether in Maine, Iowa, New Orleans or Norfolk, a draft on New York for the amount would be more valuable to the creditor, as he could forthwith sell it for more to a merchant or broker, or to a bank, than the amount of the debt in specie. Thus, much the greater part of the expenses of government might be paid without any actual transfer or removal of money by the government; and the transfers which would be subsequently made, to equalize the supply and demand for specie, would be in the ordinary course of trade or exchange, and conducted at the cost and risk of private individuals, or banks. The permanent balances, whether accumulated by private trade or governmental taxation, would indeed have to be transported from the points of unnecessary accumulation, to other places where wanted and due. But these permanent balances would be small in comparison to the whole amount; and the expense of removal, even in specie, would not be worth naming in comparison to the cost of a government banking system as a means for transferring government funds. And, moreover, these balances have now to be so transported, and in specie, and always must be, under any

system of trade or banking that can possibly be devised. To whatever points the course of trade, or operation of taxation and disbursement, *without* a national bank, or any banks, will direct and accumulate balances of specie, the same will be the direction and accumulation if a national *specie-paying* bank and branches existed. For though the balances should be in bank-notes, these notes would require to be paid in specie, as the first step towards settling the balances. The substitution of paper money adds another link to the chain of circulation, and may somewhat delay the final result. But the result will finally be the same. If a United States bank should be established this session, with 40 or 50 branches, in the first place it will not, and cannot, make the whole of its currency of equal value every where, as is generally and foolishly supposed. But even if this desired and impossible result were to be reached, and the branch notes of Wisconsin, and Arkansas, and Florida, were worth as much in the city of New York as those of the city branch, that very equality of value (or the nearest possible approach to it) would serve but to bring the notes of distant branches more speedily and in greater quantity to New York, in the regular course of trade. The branch there would soon be overwhelmed with the notes of distant branches, and would necessarily have to return them, or the balances that could not be disposed of in trade, for specie. And the specie thus required to be transported, (a process which paper-money men profess so much to abhor,) would be just as much as if paper money had not existed; indeed more, if paper money had served to stimulate and increase either legitimate trade or wild speculation.

A national bank, therefore, is not needed for the purposes above considered, and for which purposes alone most of its deluded and honest advocates desire the establishment. It would, indeed, be a powerful and admirable political engine for the purposes of those who could wield its influences. It will do wonders in transferring wealth from the possession of those whose honest industry had earned it, to that of speculators, stock-jobbers and legalized swindlers of all sorts. But, however desirable for these purposes, to the classes to whom it offers such advantages, a national bank is not needed to equalize exchanges, or to furnish a uniform currency, or to lessen the expense, or beneficially facilitate the transferring of the revenue and funds of government.

No currency but gold and silver can possibly have the same value at every part of an extensive country; and even if the currency were of gold and silver, or of paper convertible on demand *somewhere* to gold or silver, still exchange (that is, the cost of transference of funds) must cost *something*, and therefore some premium would have to be paid for drafts. But though a perfectly uniform currency is a vain fancy, and perfect equalization of exchanges is impossible, still the necessary differences and inequalities would be so small as to be unimportant, and of no practical evil, if the general and state governments had not created, or sustained by their indulgence, a depreciated paper currency. If the currency were either of specie, or of paper *truly and fully convertible to specie*, at the points where issued, the price of exchange would never be considerable, even though there were no other than state banks. If the

notes of an undoubtedly solvent and honestly paying bank should find their way to a distant state, their market value would be known by reference to any broker's list, or prices current, and the fair value of the notes could be obtained, deducting the necessary profit to the exchanger.

But if bank notes are not truly redeemable then of course they will depreciate, and depart the more widely from a "uniform currency" in proportion to the distrust of their value by the public. And such will be still the case with the notes of all non-specie-paying state banks, even if a United States bank existed—and such would be the case with the United States Bank itself, if it were not a specie-paying bank. But herein again we run foul of two other popular and prevalent fallacies, one of which maintains that a United States bank, because of its very origin and constitution, will *necessarily* be a specie-paying bank; and the other, that it will necessarily compel all the state banks also to pay specie. A few words will suffice to expose the emptiness of these pretensions.

A national bank, supported and upheld by the revenue and the credit of the federal government, must indeed be so powerful, and pervading in influence, as to withstand dangers, disasters and loss, that would prostrate the credit of any bank or banks not so sustained. Notwithstanding, it was due to good fortune and accident, and not to any inherent virtue of a national charter, that both the two former United States banks continued to pay specie throughout their existence. Either bank would certainly and necessarily have stopped payment, if its charter had continued but three years longer. And the last bank was upon the point of stopping payment years before the expiration of its charter, and before any hostile action of the government had commenced, or was anticipated, and without any cause except the improper and fraudulent acts of its own authorities. The unexpected arrival of but \$100,000 in specie alone prevented the mother bank suspending payment the next morning. The occurrence of war with any powerful enemy, and its necessary pressure on trade and finances, will never fail to cause a United States bank (if a bank of circulation) to stop payment. And this inevitable stoppage would take place precisely when it would be most disastrous to the country; and when utterly impossible to be remedied, or punished, by any legislation or other action of government.

It is true that a United States bank can exert great power in compelling state banks to pay specie for their notes, so long as they profess to pay them, and are anxious to maintain that character. But if the government of a state, Virginia for example, chooses that its banks shall be *forced* to pay specie honestly, there is no need of resorting to the agency and foreign aid of a United States bank. It would be sufficient that the government should not protect the banks in their fraudulent refusal to pay their notes—to merely let them meet the general legal destiny of debtors, whether honest or fraudulent—and all our banks would be specie-paying immediately, and otherwise as honest as the law should require and *compel*. But as the government of this and almost every other state south and west of New York, have *chosen* to sustain their banks in the long continued refusal to pay their notes and debts, they will con-

tinue so to choose, and can so sustain the banks in their refusal, in spite of any operation of a United States bank. Indeed, as soon, and as long, as a state bank boldly refuses to pay its notes and other dues, and it is sustained in such refusal by the law of the land, the bank is thereby made invulnerable against all assaults. It is entrenched behind impregnable barriers, constructed of its own discredit and infamy. The banks of Virginia could commence specie payments to-morrow, and maintain them, if compelled to that honest course by any external power. But in so doing, they must lose all their present dividends, which, whether of *net profits* or of *capital*, are now the fruits of legalized cheating and robbing the community. They would either have to contract their business, or to use its gains in purchasing specie to meet liabilities. There possibly may be plenty of other and stronger reasons for establishing a United States bank, which we mean not here to discuss; but this one inducement held out, and so generally relied on, of its causing the state banks to pay specie, is certainly the weakest and most contemptible of all pretences. The state of Virginia, the people and the government, either *do* or *do not choose* to sustain the banks of Virginia (as they are sustained by law) in their present dishonest refusal to pay their debts. If the choice is to sustain this dishonest course, all compulsory action, to the contrary, of a United States bank will be utterly futile. If the state government requires the banks to pay, there is certainly no need to go abroad for an agent to compel that which the general laws of the land would sufficiently exact, if the exclusive privileges to banks, of indulgence to fraud, were merely withdrawn.

TAYLOR OF CAROLINE.

#### EXPLANATION IN REGARD TO A PART OF MR. TURNER'S ADDRESS.

To the Editor of the Farmers' Register.

Roseneath, July 21, 1841.

Dear sir,—

My friend, Gen. Richardson, informed me this morning, that, in a conversation that he had recently had with you, you told him that you intended to publish the address delivered at the late meeting of our agricultural society. I will not disguise the fact, that I feel considerably flattered with this token of your approbation. But my object in writing is to say, that I do not feel willing that this production should thus come before the public, without a word or two of explanation. It would appear from the letter of the address, that I am in favor of a United States bank. Now the fact is, that I am no more in favor of a *United States bank*, than of any other bank. I went upon the principle that our merchants and other trading people would have a bank of *some kind*. This being the case, I thought and still think it good policy to tolerate, and even patronize, that bank which is least objectionable. And as the late United States Bank did actually equalize the currency, I gave it a decided preference over other banks, the currency of which is in a wretchedly disordered state. The sentiment intended to be conveyed is simply this: that that bank suits farmers the best which makes one man's dollar

equal to that of another, all over the world. I care not by what name it is called, if it have the above effect, that is the bank for farmers. If you publish the address, please make the above explanation. As to our long-speeching legislature, and our shaving banks, I thought they deserved a lashing, and I gave it to them with all the severity of which I was capable. With best respects, &c.

J. H. TURNER.

[The foregoing letter was received after the portion of the address which appears in the preceding sheet was in type. It is inserted as early thereafter as could be done without much inconvenience. It is not only due to Mr. Turner to permit him to explain his meaning, but his explanation is also due to the public, inasmuch as his language had been reported, and understood by many, as a thorough approval and recommendation of a United States bank. If he is "no more in favor of a United States bank than of any other [existing] bank," he is then (by his context) enough opposed to both kinds. But it is certain that Mr. Turner's words have been construed as highly in favor of the establishing of a United States bank; and one of the most striking proofs of that impression has reached us since his letter. A writer in the Lynchburg Virginian, who is regularly arguing, and at length, in favor of a United States bank, when he comes to treat of the "Expediency," copies entire and adopts all that part of the address which refers to banks, paper money and exchange—being content to bear and to repeat the well-deserved censures therein cast upon the dishonest course of the non-paying state banks, for the sake of the short passage in favor of a national bank. The writer introduces the extract with only the following words:—"2. *Its expediency*. On this point we shall be content with the following *practical argument*, for which we are indebted to the Rev. Jesse H. Turner, the president of the Henrico Agricultural Society. It is the argument of a farmer, not of a politician—and it cannot fail, appealing as it does to the common sense of every man, to exert a wholesome influence on the public mind."

In answer to Mr. Turner's mistaken ground, that the late United States Bank "actually equalized the currency," we shall add nothing more to what has been already said in the preceding pages of this number.—ED. F. R.]

#### THE SEASON AND CROPS.

The wheat crop of lower and middle Virginia will certainly fall far short of the sanguine anticipations which we held and expressed, and which were entertained by most farmers, just before the

full growth of the crop. The crop of the western part of the state, we understand, though upon less satisfactory testimony, to be no better than that of the eastern part.

After the worst winter, and greater portion of spring, ever known, for corn and spring crops, (on account of continual rains, and long continued cold,) the weather became so fine, that the hope of an average crop of corn, which had waned almost to extinction, was revived every where. But the before stunted corn did not grow as fast as was expected; and latterly, drought has prevailed until it threatens great injury to the growing crops of both corn and tobacco. Without sufficient rain soon, the corn crop in this region will be cut very short.

The oat crop was very short, owing to the wet state of the ground preventing sowing in proper time, or on land in dry and good condition.

July 30, 1841.

ED. F. R.

#### PRICES OF WHEAT.

The Shipping and Commercial list of July 29th, reports the New York prices of "Wheat, Ohio and Genesee, (old,) \$1.25 to 1.27½—southern, (new,) \$1.18 to 1.18½." The Baltimore prices, same day, according to the American—"New wheat, Md., \$1.18 to 1.25." The American Farmer, of Baltimore, (29th,) says—"The sales of Maryland red wheats are making to-day at 118 to 122 cents for good to very prime parcels. Sales of new Maryland white wheat, of prime quality, suitable for family flour, at 128 and 130 cents."

In Richmond and Petersburg the highest prices for wheat *talked of* by buyers are 110 to 115 cents. We advise farmers to wait awhile for prices at home to more nearly *approach* those of the north—and the owners of river crops to ship them to Baltimore; or, still better, to New York, where the sales are for specie, or paper convertible to specie.—ED. F. R.

#### CURE FOR THE POLL-EVIL. CASTRATING COLTS.

To the Editor of the Farmers' Register.

Campbell county, March 15, 1841.

I send you a certain cure for the poll-evil in horses, which you can publish, if you think it worthy of a place in your columns. The remedy is this: Make one or two incisions in the swelling, and then wash the wound nicely with strong soap-suds, and fill the wound with lime. A few applications will perform the cure. Care should be taken in cutting, so as not to cut across the neck, and thus wound an artery.

I will (while writing about horses) give you my

mode of castrating colts, which is not new, but plain and simple; and, I believe, if care be taken on the part of the operator, it is the best mode. I never had one to mind cutting more than a boar. The plan is this: After the colt is thrown down and carefully tied, the integuments of the testicles are to be laid open with a sharp knife, and the stone pulled out, and the cord of the nut cleaned down. The cord is then to be securely tied with a strong thread, well waxed, and the cord is then cut off near the thread, and the ends of the thread left six or eight inches long. After both stones are taken out, the wounds are to be well greased with old bacon gravy and salt.

STAUNTON RIVER.

#### THE MUSCARDINE OF SILK-WORMS.

To the Editor of the Farmers' Register.

I beg leave to make a few remarks on the article, which appeared in the last number of the Register, entitled "the muscardine." This article is calculated to gratify the curious, but when viewed in connexion with some recent publications on the same subject, it is also calculated to excite unnecessary alarm, and to strengthen the already strong prejudices which possess the minds of some persons in relation to the success of the culture of silk in Virginia.

The writer of the article takes it as settled that the *muscardine* is contagious, and cites the experiments of Dr. Bassi, of Milan, to establish this character of the disease. I have been rearing silk-worms for portions of six years, and during that period have only seen about thirty cases of the muscardine. I have twice rubbed the "sarinaceous efflorescence" (which the Europeans say is the seed of a vegetable that extends its roots through parts of the worm,) on the healthy silk-worms, in order to "inoculate" them with the disease, but they retained their health and went on as usual. This disease may be *contagious* in Europe; but until some more decisive evidence than any which has yet been adduced shall establish its character of *contagion* in Virginia, I shall hold that it is in our climate of *rare* occurrence, and *not contagious*.

I have now about 600,000 silk-worms in various stages, from *one day old* to maturity. They are remarkably healthy. The oldest are spinning in 22 to 25 days, and forming excellent cocoons. The varieties, "mammoth sulphur" and "pea-nut."

The use of lime I consider *invaluable*.\* I sprinkle it over them just before giving them their meals, *once* during the third and fourth ages, and *daily* during the last age. It counteracts the bad effects of heat and moisture, keeps the appetite of the worms keen, and no doubt hastens their maturity.

LAYTON Y. ATKINS.

Stafford, Va., July 5th, 1841.

\* Other preventives must not be neglected. The lime, although excellent, will not save worms that are *piled up in layers*, nor will it supply the place of *liberal* ventilation. I prize highly the labors of scientific men, but they are fallible, and it is possible that Dr. Bassi may be mistaken. The climate of Europe may be calculated in an *unusual* degree to produce the disease; and in assigning causes for disease, doctors will differ, and the imagination is often allowed too much play.



## SUMMARY OF NEWS.

Saturday, July 3, 1841.

**The Frederick County Bank.**—We learn, from the Baltimore Sun, that nearly the whole amount of money of which the Frederick County Bank was robbed during the month of May, has been recovered. The account of the *negotiation* by which the money was received, is a curious one. A correspondence, it is stated, took place between an attorney of New York and the officers of the bank. This correspondence was commenced about two weeks since, the attorney making propositions in behalf of his client, the robber of the bank, to which the officers were disposed to accede if nothing better could be done. Accordingly, Dr. Tyler and Mr. Bell, of the Bank, went to New York, and there concluded the negotiations with a compromise which leaves the rogue in the possession of the gold he carried off, some \$10,000, for his night's work, and the bank recovers all the rest, in value something upwards of \$170,000. This is a pretty story to tell the officers, permit the rogue to keep \$10,000 in specie, for the return of \$170,000 in paper, after they had, by the measures they immediately adopted, succeeded in getting in all the issue that had been honestly obtained, leaving the stolen money in the hands of the thief, and which would have been the surest means of his detection. It seems very likely, too, that a thief who had so long successfully eluded detection, should expose himself by entering into a negotiation to allow him to keep money that he actually had. Besides, it was exceedingly culpable in the agents of the Bank to make any compromise with a rogue which would go to reward his villany. The story but confirms the suspicions that were created at the time of the robbery, that nobody out of the bank was the perpetrator of it."—*Phila. Ledger*.

The Ledger of a later date says:—

"It appears from more recent accounts, that instead of \$10,000 the agents of the bank who effected the *negotiation*, allowed the thief to keep *twenty-eight thousand dollars*, or all the specie and notes of banks other than the issues of the robbed institution, in his possession, and which would not be likely to lead to his detection. The lawyer, one Wyley, who managed this corrupt and rascally piece of business, charged only *ten thousand dollars* for compounding the felony. The circumstances as related bear upon their face the evidence of a precious piece of knavery by some of the actors, that needs some further investigation. A curious feature in the case is, that when Wyley was questioned as to who were the robbers, that individual answered, you have seen the principal of them several times during your visit."

The Journal of Commerce announces the arrival of the brig Charles Carroll, from Tampico, with about \$70,000 in specie. The brig Patsey B. Blount, from Belize, Honduras, \$11,397. The bark Ann Eliza, from Vera Cruz, brings \$100,000 in specie.

The Rev. James Abercrombie, D. D., of the Episcopal Church, Philadelphia, died on Saturday night last, aged 84 years.

**Canada.**—A petition was presented in the provincial legislature at Kingston, recently, asking for an increase of compensation. The speaker explained to the house, that in presenting petitions asking for appropriations of public money, it was necessary to obtain the *governor-general's permission to present such petitions*! The petition was withdrawn. Bills to abolish imprisonment for debt, and to impose protective duties on foreign produce, that is, on the produce of the United States, are about to be brought before the united parliament by Col. Prince.

It is stated, in the Western (Tenn.) Review, that

several of the gentlemen from the United States, employed by the British government to instruct the natives of India in the cultivation of cotton, have returned home. They complain of the climate and its diseases, and have no faith in the enterprise of cotton growing in that region.

The Ex-honorable C. F. Mitchell has had two bills found against him, at the Sessions of New York city, for forgery; one was found by a former grand jury. There are now three indictments against him for forgery—and another complaint pending besides, which will probably be laid before the next grand jury.

There have arrived in New York, during the past week, from various foreign ports, 4839 passengers.

The Vandalia (Ill.) Free Press states, "on unquestionable authority, that Gov. Carlin has caused to be issued upwards of \$1,000,000 of state bonds, which have been sent eastward to be sold for whatever price they may command."

Major General Macomb, commander-in-chief of the army of the United States, died suddenly on Friday, the 25th ult., at Washington City.

There are no less than 346 applicants for the benefit of the insolvent laws at the present term of the Insolvent Court of Philadelphia.

The Spanish brig Frederick, of St. Johns, Porto Rico, was capsized by a waterspout on the 3d ult. The crew had barely time to take to the boat, without provisions or water, before she sank. They were picked up by the Sylph, and landed at Bermuda.

**Parsimony vs. Vanity.**—The Boston Mail thinks an effectual remedy might be had against the long and foolish partisan speeches of members of congress, by their being obliged to have them published at their own expense.

**Rain storm at Lynchburg.**—A heavy and destructive storm of rain was experienced at Lynchburg on the 21st. Several breaks were made in the James River Canal, and dams, bridges, &c., were swept away by the force of the torrent.

A memorial for a United States Bank, measuring *two hundred feet in length*, with double columns of closely written signatures, was sent to Congress, from New York, on Saturday, in charge of a committee from the board of trade.

The Montgomery county (Pa.) prison has not a single inmate.

By this morning's mails, July 3.

The Philadelphia Ledger of yesterday says:—

"The Frederick Examiner, of Wednesday, has a statement of the facts in relation to the recovery of the money stolen from the bank of that county. The Mr. Wiley who undertook to perform the business for the thieves, is an associate justice of one of the inferior courts of New York, and was engaged in the discharge of the duties of that office when the agent of the bank waited upon him. The Examiner says this is not the first time that Mr. Wiley has acted as mediator in like cases. Some very few years ago, he was, we understand, in the same way instrumental in the restoration of the funds stolen from the Providence Bank to the amount of \$183,000. He would, in the present instance, give no other information on the subject of the Frederick County Bank robbery, than that he was informed that 'the vaults were opened by false keys, and that six persons were concerned.' This account, if true, shows Mr. Wiley to be in strange connexion with burglars and robbers. The duties of his office are to detect and punish crime, with a view to prevent it, but his practice, it would seem, is to screen the criminal, apparently for his own benefit. It is time that his acts were more particularly scrutinized, for he now appears to be implicated in as great an operation of stool pigeoning as has happened."

**Canada.**—Reinforcements for several of the regiments in Canada arrived at Quebec on Sunday last. The number of immigrants who have arrived this season, to the 26th of June, is 15,254. The experiment of sending produce down the Rapids to Montreal by steam has succeeded. The government have a decided majority in the provincial parliament.

It is said that Dr. Dyott, who was recently released from prison, is again to be opposed upon his application for the benefit of the insolvent laws, at the next term of the Insolvent Court of Philadelphia.

*Saturday, July 10, 1841.*

The steamship *Britannia* arrived at Boston on the 3d, in 13½ days, bringing accounts from England 15 days later.

Sir Robert Peel's motion of "no confidence in ministers" had passed by a majority of one vote. Parliament was about to be dissolved.

"All England is in a state of tremendous political excitement." "The money market is consequently stagnant; the funds paralyzed. There is an improvement in the cotton market, but very little or none in trade in general. The price of wheat has improved. The crops are all in fine order.

The canvassing for the approaching election was in full operation.

"Nothing new from China."

The insurrection in Crete is still gaining strength.

The great abolitionist and anti-slavery apostle, Sir Thomas Fowell Buxton, is a great brewer and gin-shop owner of London.

"The warmest advocate of the credit system is fain to confess, that the difficulty in the way of a sound currency at the south is the disgraceful fact, that the respective legislatures are under the influence of insolvent banks; and yet these same persons advocate the raising up of a moneyed power, in whose embrace the independence and influence of congress will be crushed, as surely as that the currency laws of Pennsylvania have passed into a by-word."—*N. Y. Herald.*

Judge Henry St. George Tucker, president of the Court of Appeals, has been elected Professor of Law of the University of Virginia. Professor Sylvester, of the London University, has been chosen to fill the vacant mathematical chair. The professorship of Modern Languages is also supplied.

The students of Harvard University (Mass.) are in a state of rebellion—but somewhat quieted at last accounts.

It is thought that Mr. Clay's United States Bank bill, (which goes the whole figure,) may command approving majorities in both houses of congress. We doubt it. If it passes, it will be vetoed by President Tyler. Mr. Clay's bill forces the states into the measure—that of the Secretary of the Treasury proposes to bribe them into assent. It will be more difficult to oppose the latter than the former application, and therefore it is more to be dreaded.

The Planters and Mechanics' Bank of Columbus, (Ga.) has at last been protested on a \$5 note, for which specie was demanded and refused. Mr. James Wesson, who did this good service to the cause of honesty and the public weal, has notified the governor of the protest, and, according to law, a writ of *scire facias* must be issued against the bank.

The steamer *Clarksville*, from New Orleans to Nashville, struck on a snag, and sunk to the hurricane roof in two minutes. Two persons only were drowned. The cargo a total loss.

A nomination of Gen. Scott for the next presidency has been made by the whig party in Pennsylvania, to meet that of Commodore Stewart, by the democratic party; and "Chippewa clubs" on the one side are opposed to "Ironides clubs" on the other. We trust that the next president will have some other and better grounds of claim than either military or naval glory.

More than 300 officers of the small army of the United States have resigned their commissions since the commencement of the war in Florida.

S. V. S. Wilder, a great stock-jobber and financier of New York, has become bankrupt. His deficit is stated by some to be three millions of dollars; the most moderate estimate is one million.

The state of Indiana has failed to pay the July interest of her state debt.

Gen. Wingfield Scott has been promoted to the rank of Major General, (of which he had previously but the brevet,) and thus, as senior officer, becomes commander in chief of the army.

A slave was concealed on board a vessel which lately sailed from this town for Boston. The owner of the slave pursued and overtook the vessel in James River, and searched for and recovered the slave. The vessel belongs to Petersburg, but is commanded by a Boston man.

Young Semmes, the student of the University of Virginia, who was in prison awaiting his trial next autumn for the murder of Professor Davis, has been bailed in the penalty of \$25,000. He is said to be dying of consumption.

The bill for distributing the proceeds of the public lands among the states has passed the House of Representatives, but by a majority of only 8 votes.

The legislature of New Hampshire, by a vote of 160 to 51, have passed the following resolution, bearing upon the slave-stealing controversies between New York and Virginia, and between Maine and Georgia. "Resolved, That the refusal of one state to surrender a person charged with the commission of a crime within another state, and who shall flee from justice, is in open disregard of the plain letter of the constitution, subversive of the peace and harmony of the union, and destructive of the ends for which the federal constitution was established."

The dividend of profits of the Merchants' (Cotton) Manufacturing Company of Petersburg recently declared, was 5 per cent. for the half year. This company has formerly paid at the rate of 24 per cent. a year, and rarely less than the last dividend. All the cotton manufacturing here (as elsewhere) are much depressed, and for the greater part make no dividends.

The recent annual report of the Raleigh and Gaston Rail-road shows that great work to be improving. The receipts of the last fiscal year exceeded the preceding by \$17,000, or about one-third added to the previous income. We learn from other sources that the business is managed well, and with strict economy.

*Saturday, July 17, 1841.*

The notes of the Wheeling Bank are now at 10 per cent. discount below the notes of the other non-specie paying Virginia banks, and are no longer current, although guarantied by the state, by being made receivable for taxes. But for that guaranty, they would sink much lower. As it is, they will afford a fine harvest to deputy sheriffs, who will buy up Wheeling notes at 10 per cent. discount, and pay them into the treasury; and all the loss of depreciation will fall upon the commonwealth. This is but a small foretaste of the effect of the state being security general to the banks. Whenever one of them shall stand confessed as bankrupt and insolvent, its whole issue of notes will be used to pay in the state tax; and having served that, their then only use, they will remain worthless in the treasury. If the legislature of Virginia is not in absolute bondage to the banks, they will, at the next session, withdraw the government guaranty of bank solvency; and also proceed to discharge all state debts and obligations by selling out bank-stock, until the existing partnership of bank and state shall be completely dissolved.

The Richmond Dock was sold at auction, last week,

for \$100,000, and bought by the James River and Kanawha Company.

The "Catholic Total Abstinence" societies of Philadelphia have had a grand display, in a procession of 7,000 members.

"The legislature of New Hampshire, by a vote of 138 to 99, passed a bill which makes the private property of the stockholders in all the banks hereafter to be chartered, liable, to a certain extent, for the debts of the institution." This is something like a *beginning* to correct the abuses of the banking system.

The Bank of Darien, (Ga.) is *confessedly* broken. Four-fifths of the stock belongs to the state of Georgia. It is expected that the notes will not be paid. This is a fine specimen of the policy and *profit* of a government becoming a partner in banking operations.

The minister sent by the Texian to the Mexican government was not permitted to land. The Texian papers intimate the renewal of war, by the invasion of Mexico.

The elections in Mississippi will turn upon the question of paying the state bonds or not. There is the "bond-paying" party and the "anti-bond-paying" party, each running its ticket. This is one of the most deplorable results of the swindling banking system fully carried out. The legislature of Virginia have not as yet gone half way in furthering the great swindling paper money system; but their course is onward; and, if not checked, will lead to such results as have already been realized in Mississippi.

The village of Waterford, N. Y., has been almost entirely destroyed by fire. From 70 to 80 houses were burnt.

McLeod's application for discharge upon writ of *habeas corpus* has been refused by the Supreme Court of New York, and he is remanded for trial by jury, in Niagara county. He may, however, previously appeal to the Court of Errors of New York, and thence to the Supreme Court of the United States. His escape, through one of the many holes offered, will be certain; but it is a pity that it had not been effected without so much delay, fuss, and national discredit.

The following passage from the "Money Article" of the New York Herald, of the 13th, applies to all other banks as well as those of New Orleans:

"In New Orleans public opinion is taking a direction which will, in all probability, soon drive the sound banks into resumption. In May last we stated that many of the brokers here were buying up the certificates and bills of the southern banks, and sending them home and protesting them for non-payment; then procuring judgment and attaching any funds of the Banks that may be found in this city. In New Orleans, by the charters of most of the banks, they are compelled to pay 12 per cent. interest on protested notes until they are paid. This has led to a very general adoption of this process, in regard to these banks, the standing of which is such as to render the ultimate payment of the notes comparatively sure. This puts them in a position that will make resumption more profitable than suspension; and of course those banks that are able will do so. Those banks that are sound, it is supposed would long since have resumed if they could have procured a settlement of balances from the other Banks. They have, during the past month, been more limited in their discounts, and have nearly ceased buying bills. This, with the demand for their notes for protest, have caused a fall in the premium on specie. There is nothing like enforcing the laws applicable to the just claims of creditors, to equalize the exchanges. In a few years' time people will look back with astonishment at the absurdity of "relieving the people," by authorizing the banks not to pay them that which is due."

The law of Ohio now is, that slaves carried by their owners within the jurisdiction of that state are thereby

entitled to be free; and passengers in steamboats, calling at Cincinnati, have thus been, and hereafter will be, systematically robbed of their slaves, by an organized association of abolitionists. The law is the same in Massachusetts, and a case of its exercise has just occurred, accompanied with circumstances of great outrage. Mr. Ludlam, of Richmond, with his family, was called suddenly to New Bedford, to see his wife's dying father. Mrs. Ludlam being herself in bad health, made it necessary to take along her negro servant girl, who was a hired slave. When in New Bedford, two white ministers of the Gospel procured a writ of *habeas corpus*, and heading a mob of negroes, searched the house, and seized and carried off the affrighted and reluctant girl to Boston, where, upon examination, she was discharged by the judge, and of course remained *as free* in the hands of the abolitionists. The slave-holding states *must properly oppose and put down* this hostile course, or otherwise submit to the rule of the abolitionists. For these and other worse acts of the abolition states, the strongest measures of redress not forbidden by the federal constitution should be adopted and strictly enforced.

Saturday, July 24, 1841.

The Caledonia steam ship reached Boston on the 17th from Liverpool, bringing news 15 days later from England.

Parliament had been prorogued. The new elections were in progress, under great excitement. In Liverpool and other places there was much rioting, and several persons had been killed. In Carlisle, the military had been called out, and two men were killed in the affray. The Conservatives are expected to beat the Whigs; in which case there will be no repeal of the corn laws, or extension of free trade.

The growing crops of England promised well.

The French accounts are barren of news. Nothing important in the accounts from Spain, Portugal, and the north of Europe.

The insurrection in Candia was still gaining strength. The spirit of insurrection spreading through the Peloponnesus and other parts of Greece Proper, and King Otho's rule is in peril.

Another over-land mail from India had been received, but which brought no later accounts from China than before.

The French loan to Texas has not yet been made, as before reported.

A remarkable case of "Lynch law" has occurred in Kentucky, which for deliberation and coolness as well as determination may compare with the celebrated Porteous mob. A drover named Utterback some time ago had been attacked on the road, robbed, and his throat cut, and was left for dead. But he was found alive, though horribly mangled, and though never to be restored entirely, it is now supposed may live. Two men, Maythe and Couch, supposed on undoubted testimony to be the robbers and intended murderers, had been some weeks imprisoned for trial; but would escape with comparatively but slight punishment by law, if their victim should live. This consideration, added to the general commiseration felt for the pitiable condition and long continued suffering of Utterback, caused the remarkable and unjustifiable act of outrage which is stated as follows in the Cincinnati Republican. Full and public notice of the intention had been sent 36 hours in advance of the attempt, and a clergyman sent, and who went, to administer religious aid to the prisoners. "On Saturday, the 10th inst., in pursuance of the notice, about five hundred citizens of Bourbon, from which were added some from Scott and Harrison counties, came into Williamstown in solemn procession and most perfect order. They had chosen their sheriffs to act for the occasion, and proceeded to the jail, and demanded the prisoners, Maythe and Couch. The sheriff of

Grant refused to give them up, or the keys of the prison: he offered, however, no other resistance, and the people at once broke open the doors. They then took the prisoners, placed them in an open wagon, their irons on them, took up the line of march without the least noise or confusion, to the spot of ground where the murder was attempted, about four miles distant. By this time the number assembled was believed to have been at least two thousand. After arriving on the ground, Mr. O'Hara, a member of the bar, addressed the people for some time upon the propriety of permitting the law to take its course. He was listened to with the utmost silence and respect, but without apparently altering the determination of a single person present. The preliminaries were then adjusted, and the prisoners were asked if they had any thing to say previous to the closing of their earthly accounts. One of them, Maythe, addressed a few remarks to the people, admitted the commission of the act for which they were to suffer, denying, however, that it was his wish to commit actual murder. Religious service was then performed by a clergyman present, and Maythe and Couch were hung in their irons, upon a tree standing over the same spot where their crime was committed. Rude coffins were constructed, and they were buried. The crowd then dispersed in the same perfect order."

The New York times says that the steam frigate built in New York, by private contract, for the Russian government, will cost less by 40 per cent. than if it had been built at the United States navy yard. The vessels of war built at our navy yards are overcharged at least as much. The steam ship Mississippi, now building, at the New York navy yard, has already cost \$700,000, and before finished will cost a million.

The Mobile Register says that the probable loss of that city by the failure of S. V. S. Wilder is over \$300,000.

"The Chattahoochee Railroad Bank of Georgia, which has just failed, is said to have been one of the most stupendous frauds ever exposed. The whole country is represented as flooded with its issues, amounting to millions. The nominal capital of the Bank is three millions of dollars, although it is said there have never been three millions of cents paid in, nor had they ever ten thousand dollars in specie in their vaults. The Chattahoochee Bank has been a swindling concern from first to last, from alpha to omega. Its very first step in obtaining a charter was a fraud upon the Legislature, as it is well known such a thing as building a road was never in serious contemplation. Not a dollar was paid in by the stockholders, but upon the naked charter they went on to issue bills without limit. Now it is said the Bank is broke. How broke? How could it break, if there was the smallest particle of honesty in all its transactions? For nearly the whole of the time the Bank has been in operation, specie payments have been suspended. They have paid nothing out but bills. How then, we repeat, could they break? The closing of this Bank, it is said, is the largest fraud ever committed in Georgia, as there are more of their bills out than there has ever been of any other institution which has heretofore failed. The Macon Bank fraud was but a trifle to it. The distress it will produce is incalculable. There is scarcely a man or woman in that section, who has any bills at all, but has the most of them at this Bank. This, added to the pressure of the times, will make the distress enormous."—*Phil. Ledger*.

The bill to borrow \$12,000,000 for the government of the United States has passed both houses of congress.

Hostilities have been commenced between the Argentine and Monte-Videan republics. A battle had taken place between their naval forces in the La Plata, of Monte-Video, in which the latter had been worsted.

The Texian government was about to send a body of 300 soldiers to invade Santa Fe, and withdraw that province from the Mexican power.

Friday, July 30, 1841.

*Steam navigation on canals.*—Lieut. Hunter's steamer Germ, made its appearance last week at Elizabeth City, N. C., causing all the natives to stare and wonder. It passed through the Disinal Swamp Canal at the rate of six miles an hour, "without producing as much ripple as an ordinary canal boat," and thus removing "all doubts of the practicability of navigating canals by steam, without injury to the banks." Last evening the Germ arrived at our wharves, and attracted considerable attention. She is about fifty feet long and nine feet beam. Her wheels, one on each side, work horizontally, and completely under the water, with a projection on either side the depth of the paddle, so that the whole machinery may be considered as entirely confined within the boat. She will make a short trip to-morrow, with several scientific gentlemen on board. She is now lying near the Navy Yard, and has created considerable excitement among the curious. She is to proceed to New York in a few days.—*Phil. Gaz. July 26th*.

There were recently some executions in Illinois, under "Lynch law," by a band of self-constituted "Regulators," which, in undisguised lawlessness, scarcely fell short in enormity of the deliberate Lynch murders in Kentucky, stated in last week's summary. The following are striking but legitimate results of such acts, and of the state of society which permits their perpetration. "The Rockford (Illinois) Star had the independence to maintain the supremacy of the laws, by condemning the recent proceedings by the mob, in the execution of the Driskells. The citizens, thereupon, pretending to regard it as an appeal to the horse thieves to rally and retaliate, assaulted the printing office, broke the press, and scattered the type through the streets. From the lawless spirit which these citizens have shown, it is very evident that they would lynch the jury that would convict any one of their number of the murder, and probably hang the judge that would sentence them. Such is the justice of mob law, and the regard it shows for the rights of individuals. Those who countenance it do more wrong to society than would ensue from the crimes which it is the pretended object of mob violence to punish and check."

The rebel federalists of Mexico are gaining ground, and there is every prospect of their success over the existing government.

*Another case for Mr. Justice Wiley.*—"An express arrived in town this morning, from Jacksonville, Illinois, bringing a handbill, announcing the robbery of the branch of the State Bank of Illinois, of about \$90,000 dollars. We copy it.

#### 'FIVE THOUSAND DOLLARS REWARD.

The Branch of the State Bank of Illinois at Jacksonville, was robbed last night, Sunday, the 11th inst. The doors were entered by false keys. The following is the probable amount taken by the robber, to wit: \$78,000 of paper; about \$47,000 of the above was in Parent Bank paper, the balance mostly in notes of the Branches, and Bank of Illinois. About \$8,000 in gold, and 3 or \$4,000 in silver. The above reward will be paid for the recovery of the money and the detection of the robber. J. P. WILKINSON, President.

Jacksonville, July 11, 1841.

"We learn in addition to what is stated, that the books, papers, and evidences of debt, were cut up, mutilated and destroyed by the robbers—for there must have been several persons engaged in it; and that part of the banking house was occupied as a residence, by the teller."—*St. Louis New Era*.

The facts of this robbery (like most other of such successful and clean jobs) show conclusively that officers of the bank committed or directed the robbery.

Interlopers in the business, or other rogues than bank officers, generally make bungling work of such operations.

Mr. Clay's bill to establish a national bank has passed its third reading, in the Senate, by a vote of 25 to 24. This is equivalent to a passage by that body. An amendment, offered by Mr. Clay, which secured the passage of the bill, provides that the directors may establish branches, *with the assent of the states* in which the branches are to be established; but that if the legislature of a state does not "unconditionally assent or dissent," at its first session, its assent shall be thence *presumed*; and further, that when congress may find it necessary and so direct, *branches shall be established in any state, although it had dissented.*

In Monticello, Ga., it has been resolved by a public meeting not to receive any bank notes, after September 1, except at their depreciated value, or market price in specie. This course, together with other previous and extensive operations in the south and west, will help greatly to bring dishonest banks to justice, and to show them (however contrary to all previous experience) that "honesty will be the best policy" for banks as well as for individuals. Large note-holders are having their bank notes protested for non-payment, when they thereafter carry 12 per ct. interest in North Carolina, Louisiana, and some other southern states. Such creditors have in other cases attached the funds of non-paying banks in other banks, or wherever found. The Charleston Mercury says that these latter remedies are so working that every bank in the south-west must resume payment or stop all operations.

The banks of Virginia, by law, are to resume specie payments next January. But their authorities seem to have no thought of doing so, and have been making no more recent preparation for resumption,

than previously, since the beginning of the suspension in 1837. They must count confidently that their present exemption by law from the obligations of faith and honesty is again to be renewed; and will be renewed, session after session. Banks that have not prepared to pay specie in 5 years, never will prepare. There will be offered the same and as strong reasons to the next legislature, to extend indulgence to their continued bad faith, (*for the benefit of the people, of course,*) as at every previous session; and there ever will be the same and as strong reasons. The plain inference, from the whole procedure, and course of false assertion and argument, is, that the banks and the thorough paper money men go for the *suspension of specie payments as a permanent and general policy.* The promises made and expectations given to the public for resumption of payments are intended merely to deceive and to keep quiet the long suffering and grossly cheated people. A new proof of this intended policy will be seen next winter, when another year of indulgence and impunity to the non-paying and swindling system will be certainly proposed, (and as certainly carried, if the people shall still permit the banks to legislate,) and upon precisely the same grounds that have served for that purpose at every session since May 1837.

"There has been some excitement in Mobile in consequence of recent bank frauds in that state. The mal-practices of the State Bank and branches, which we have before noticed, have been a principal cause. The amount of the frauds is very large. The suspended and doubtful debt of the branch in Mobile will reach upwards of six millions of dollars."—*Money Article of N. Y. Herald.*

July 30.—The bank bill has passed the senate, by a vote of 26 to 23. Both the senators of Virginia voted against the passage.

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### SELECTIONS.

# THE FARMERS' REGISTER.

VOL. IX.

AUGUST 31, 1841.

No. 8.

EDMUND RUFFIN, EDITOR AND PROPRIETOR.

ADDRESS TO THE HENRICO AGRICULTURAL SOCIETY, BY THE PRESIDENT, THE REV. JESSE H. TURNER. DELIVERED MAY 26, 1841.

(Continued from last number.)

But I must pass on, or I shall subject myself to the same charge which I am condemning in others. As, however, I receive no pay for my speech from the state, nor from any other quarter, I hope you will bear with me; and I promise to make no more speeches, either long or short, unless you call me to it.

But, gentlemen, an enclosure of some kind we must have: and that which is most convenient, requiring the least cost, and is found at the same time to answer the purpose, is upon the whole the best in any particular case. If, however, stone were abundant and convenient to me, I think I should feel no hesitation in availing myself of that material to construct my fences with. It might cost a little more at first, but then the great durability and strength of the structure would more than compensate for the original outlay. But in the absence of stone, the post and board, or post and rail, will make an excellent fence. These placed on the bank of a ditch, and kept in good repair, will present a very formidable barrier to the depredations of mischievous animals.

I have had some experience with what is generally called the *live fence*. About thirteen years ago, I enclosed the whole of the farm which I then owned, with the cock-spur hawthorn. Since that I have added considerably to my farm and somewhat to my thorn fence. It now forms a line perhaps two miles long. The only trouble it gives me is to prune it every fall: and with a single board at the bottom, I find it answers the purpose remarkably well.

There is yet one other fence, of which I wish to say a word or two; that is the old fashioned worm fence. To this, I think, there are many solid objections. In the first place, it is a slovenly affair, and therefore offensive to the sight. And then it occupies more space, and requires more material in its construction, than any other fence. In addition to all this, it is certainly the weakest of all the barriers that we put around our farms. A strong bull or a mischievous ox will demolish it in less time than I have spent in talking about it—and every time the wind blows hard the prudent man will go out, and it is ten to one if he does not find it prostrate in many places. I once knew a man remarkable for his energy. No difficulty nor obstacle seemed to present a barrier in his way. He went straight forward, and generally succeeded in accomplishing his purposes. In conversation with him, (and I like such persons,) and in calling his attention to this trait in his character, he remarked that he had adopted these remarkable words for his motto—*Aut inveniam aut faciam*." (It is his Latin, gentlemen, not mine.) Now see one

of our long-snouted, lank-sided rooters approach such a fence—he gives a grunt, and there is something foreboding evil in that grunt—the meaning is, in hog Latin—*aut inveniam aut faciam*—and with that, introduces his lean carcass to the rich stores of the corn field: and now commences the chase with clubs, and stones, and dogs, until the rooter is fairly dislodged. Nor is this all—for now commences a much worse thing—*quarrels among neighbors*. This must suffice as to enclosures, for as to that other miserable substitute called a *walling*; especially when cedars are not plenty, I consider it too contemptible to say a word about it.

As to the *buildings*, especially the family dwelling, I think it necessary to say but very little. All will agree that it ought to be constructed with a special reference to convenience and comfort; and in the material used and style of finish, every man will, of course, consult his own taste and circumstances. I must, however, remind you, that this is the great sanctum of our wives and daughters; for it is here, together with the kitchen, and dairy, and poultry house, and garden, that we expect them to discharge the important duties of their station. I need not remind my fair country-women that if they fail in their appropriate sphere—if, on the contrary, they lend not a constant, a steady, and faithful hand, in their proper station, there is wanting a link, an *important* link in the great chain of good management. But there are other buildings necessary on a farm, without which the system of management cannot be called a good one. These are the barn, or some substitute for it, together with shelters for our stock, which our long and inclement winters have of late rendered so necessary. In this respect, in this section of country, I fear, I know, that our farms are wretchedly deficient. I do not ask you if you have a stable for your horse or mule; I presume there is no farm destitute of this indispensable appendage. But how did your cow and your hog fare during the late inclement season? Did they enjoy a comfortable shelter whilst the storm was raging around them?

This subject, gentlemen, I cannot press too earnestly upon your attention. In this way, we gratify the feelings of our humanity; for who can rest comfortably in his bed on a cold night, when amidst the peltings of the pitiless storm, he hears rising above it the lowings of his cattle and the lamentations of his swine. Besides, by attending to this thing, he does but consult his own interest; for it is an admitted fact, that the well sheltered beast requires less food, and in addition to this, his manure is greater in quantity and better in quality. I conclude what I have to say on this subject with a single remark. Let your negro-houses be warm and comfortable.

But I hasten to that which I consider still more important in a well managed farm. Such an establishment will regularly produce large crops, and so far from being exhausted, will be maintained in a state to produce still larger.

will be kept in a state of continual improvement—and herein consists, as I think, the whole art of good farming. And now, the all important question presents itself—how is this very desirable state of things to be effected? I am fully aware, that I am now approaching one of the most complicated and difficult questions in agriculture; and I acknowledge that I touch it with great diffidence. If there be any point connected with my vocation, on which I have read, and thought, and studied and sought information, with more intentness, than any other, it is this vexed point. All will agree, that to the continual improvement of our lands, large additions of manure of some kinds are indispensably necessary. But the difficulty is—what kinds are most available—calcareous, or that large class which are generally called putrescent manures? And then what is the most suitable time for their application, in winter, when the ground is naked, or to the growing crops? And *how* are they to be applied, as a top-dressing or immediately to be covered with the plough? After worrying and vexing myself with these and many other points connected with manuring, I have concluded to dispose of the whole affair in the following summary way—take such manures as you can get, and apply them at such time and in such manner as you may find most convenient, and I have never seen any lands but would be benefited by the process. If, however, I were to recommend one mode above another, it would be, to top-dress the grass lands, and the next year or the year following, to submit the same fields to a corn crop. Good farming then mainly resolves itself into this one thing—to possess yourself every year, of a large amount of valuable manure; and if this be all, I have no doubt that every one now present *feels* that he can be a good farmer. Among the many anecdotes which are told of the celebrated John Randolph, of Roanoke, I have heard this as one—that whilst a member of the United States Senate and actually delivering one of his eccentric speeches, he suddenly paused, and fixing his burning eye upon the presiding officer of that body, he exclaimed—“Mr. President, I have discovered the philosopher’s stone—it consists in four short words—*pay as you go*.” I think I have made the same discovery. It consists in making, every year, a large pile of manure, in distributing it in the proper season over our fields, and then, in a course of neat, careful, and diligent culture. It follows, therefore, that the philosopher’s stone is no longer a fiction, existing only in the brains of deluded alchemists. John Randolph discovered it in the Senate of the United States; and from traces I have seen I verily believe that it lies concealed somewhere close by my farm pen, my stables, and my hog sties. And the beauty of the thing is, that it is not confined to any particular locality. If you look for it, I doubt not, you will find it in the immediate vicinity of your farm pen also. Yes! the farmer, the judicious farmer has at last discovered the long sought-for, the renowned philosopher’s stone, the magic touch of which changes every thing into gold!

The great mischief, among us farmers, is that we are in too great a hurry to get rich. We seem to forget, that the golden age has passed

by, and that we are living under the hard influence of the iron age. We greatly mistake too, as I think, as to that in which our true riches consist. One man considers himself rich, because he has a large sum of money to lend out at a usurious interest, and thus takes advantage of the distresses of the times. Another is accounted rich, because he owns a large amount of stocks in some moneyed institutions. But the farmer’s wealth consists, not in his stocks, not in his houses, *but in his rich lands*. I recollect that when I began farming, an old friend and acquaintance, Mr. John Carter, gave me a piece of very valuable advice—“make your lands rich,” said he, “and in proportion as they become rich, *you* will be rich.” The old man spoke the truth. The Bible tells us that man was made out of the dust of the earth. This is true of all; but the farmer is identified, in a peculiar manner, with the ground that he cultivates. When that is poor, he is poor, and when that is rich, he is rich too.

I have also known many farmers to be seriously injured, and some of them ruined, by indulging in a spirit of speculation. They contrive to get hold of a few hundred dollars, (honestly I hope,) and instead of first paying their debts, and then laying out the balance in manures and other things by which they might improve their farms, they go away and lay it out in bank stock, or gold mine stock, or in some other humbug foolery of the same kind. Presently stock fluctuates and the gold mine prospects are blown sky high, and the poor man’s capital vanishes into smoke.

I hope it will not be ascribed to vanity in me, but I cannot refrain from detailing an incident which actually occurred in my own case a few years since. During the rage for gold mine speculations I was visited by a substantial and highly valued friend of a neighboring county. He came to me in my corn field. At that time the plants were about a foot high, and I was busily engaged with my hoe in helping up the hindmost hand with his row. He looked at me with a degree of surprise, and I doubt not felt a real compassion for me. At length said he, after the usual salutation, why toil here in this dull, slow way? And taking from his pocket some beautiful specimens of virgin gold, he exhibited them in all the conscious pride of superior intellect. This treasure, continued he, is found in a mine which I am now working to very great profit, and I advise you to abandon this dull pursuit and embark in the same enterprise. The dazzling spectacle had, I confess, its effect upon me; and to cover my mortification I replied, I too am digging for gold, but with this difference—you go to the depth of many feet, I to the depth of a few inches—and the event has proved, gentlemen, that more gold is to be obtained near the surface than far below it.

And here, perhaps, I ought to close my address, but there are still a few circumstances connected with the character of the good manager, to which I think it important to call your attention. And first, our farmer is a man of strict economy in the proper acceptance of that term: not that he is stingy or niggardly in his disposition, but he so contrives to manage his affairs, that every thing has a plenty and nothing is wasted. The best story I ever read was written by Miss Edgeworth, and is entitled “Waste



not, want not." It is essential then to good management to waste nothing, not even a crust of bread, for the dog will eat it, or if he happen to be a pampered favorite, the hog will eat it. And here I can at last reverse my text, and say in confidence, do as I do. If there be any thing which I do most cordially abominate, it is that of wanton waste. I can say in truth, that I waste nothing, not even a weed, for when placed in my great manure workshop, my hogs and cattle very soon manufacture it into a valuable article. Above all, our good manager is a great economist in his use of time. He believes, with Dr. Franklin, that "time is money," and in his estimation it is a coin of inestimable value. It is, therefore, his habit to rise early, and to get a good start at his business in the morning, for this he finds will make his work light during the whole day. Not even a rainy day is lost by him; for now he shells corn and beats homminy, and thrashes out his peas, and makes brooms and footmats, for which the good wife will thank him; and puts a new handle to his hoe and axe; and mends and oils his old harness, by which they will last twice as long; and does a great many other jobs, which good management will readily dictate. It is, therefore, needless to remark, that you never see this man loitering about the court house, or the muster field, or other places of public resort, unless he has business there. On the contrary, it is his habit to stay at home and do his duty there, unless business calls him away. But whilst I record my testimony against all waste, I would by no means recommend the contrary extreme. Some people here, in endeavoring to avoid Scylla, fall on Charybdis, and are equally certain of being engulfed. Whilst, therefore, they studiously avoid all waste, they practise the stinting or even starving system at home. This, of all economy, I consider the worst. The fact is, that no man ought to keep an animal unless he can keep it well. If food is too scarce to feed the hog, the proper remedy is to send him to the butcher, and when you can no longer feed your horse or cow, don't turn them out upon the common to starve, but send them to market.

Some time ago, in visiting a friend and neighbor, whom I highly esteem, my attention was called to his hogs. They looked well, (for my friend is a good manager,) but I thought they would look still better, if they had a little more corn, and ventured to suggest this to him. Corn is scarce, was his ready reply. That may be, said I, but if you proceed on this plan, meat will be still scarcer. Besides, continued I, the hog when he eats, don't eat for himself, he eats for you—he don't waste your corn—he just turns it into meat, and this you know, is a very useful article in your family. The idea seemed to strike him as a new one, and whether it is owing to this little incident or to some other cause, the fact is, that my friend's stock of hogs has since that been celebrated as the finest in all the neighborhood. A little anecdote occurs here, which I beg leave to relate. Cuffee came in on a very cold day almost frozen, and that he might enjoy the full comfort of the fire, placed himself very near to it. His friend, Sanbo, presently observed his foot smoking. Cuffee, said he, your foot is burning! Taint my foot, you fool you—

he massa foot. From this, some of you may think Cuffee a fool—but he was very far from it. He went on the same principle that other philosophers do, that the whole includes its parts, and that, therefore, as he was his master's property so was his foot. When, therefore, I see my hog eat, I find no fault with him—he eats for me.

Again—our good manager is a man of reading. And here permit me to remark, that we, of the present day, ought to be far better farmers than our grandfathers were. They had no Ruffin of the Farmers' Register, nor Skinner of the American Farmer, nor Buel of the Cultivator, nor Botts of the Southern Planter, to tell them of the immense improvements in the farming world. The floods of light, which we now enjoy were all darkness to them. I would not be without my agricultural periodicals for ten times their cost. I scarcely ever receive a number, but I consider it worth more than the price of the whole series. Go then and subscribe for at least one of these works. Take one, and my word for it, in less than six months you will feel that you must have another. The great benefits arising from the one, will enable you to pay for the whole.

Further, our good manager is a man of observation. His duties and his pleasure call him frequently to his fields, and whilst there, he keeps both eyes wide open, watching the results of the various processes in which he is engaged; and there is no variety in manuring, or difference in the mode of culture, but he marks it, and is ready to profit by any superiority which one plan has over another. And, lastly, his reading and observation combined, make him a man of thinking. You see, then, the compound which I have endeavored to present—economy, industry, reading, observation, reflection; and when you see all these concentrated in the same individual, you may set that man down as a good manager.

You now have, gentlemen, a sketch, and, I confess, a very imperfect one, of what I conceive to be a well managed, a well cultivated farm. But defective as it is, suppose its counterpart could be found in any one case? Suppose that this scene covered the limits of our whole society? Suppose that all our farms were tastefully and judiciously divided into their several fields, and that every field was so enriched and so cultivated as to produce an abundant crop? Suppose that all our enclosures were neat, and straight, and substantial? Suppose that all the buildings, as well for the servant as for the master, together with the shelters for the brutes, were so constructed and kept in such order as to make all comfortable? Suppose that neatness, and industry, and economy, and good order pervaded our whole limits, and that in all these respects, there was a manifest improvement from year to year? What might we not say in regard to it? Might we not exclaim, with the Bible, "Happy is that people that is in such a case?" But suppose we allow our fancy to take a more extensive flight, and instead of confining this goodly prospect to a single county, you allow it to cover the whole of our beloved mother state; how beautiful the sight? how lovely the picture?

And may not all this be realized? I answer with confidence that it may—and I hereby pledge



myself, that, if God please to spare my life, I will use my best endeavors, year after year, to bring my farm to this state of things. Brethren of the Agricultural and Horticultural Society of Henrico County, will not you pledge me to the same? Then the work is in a great measure done. If each individual will act, the whole mass must necessarily be moved.

I close with one more remark. Citizens of Richmond, who are no farmers, but who are deeply interested in the events of this day. You see the objects of this society—it is to make our country smile with beauty—it is to make it teem with plenty and abundance—it is to elevate the character of our farmers, and to make them, in all instances, intelligent and useful members of society. Will you not come forward and aid us in this good work?

#### HOW DOES CLIMATE AFFECT THE STAPLE OF WOOL?

From the Farmers' Monthly Visitor.

*Hopkinton, N. H., Aug. 1st, 1840.*

*Hon. Isaac Hill.*—In the Visitor of yesterday, now before me, I find a very interesting account of Col. Jaques, his farm, and his stock—but more especially interesting is the account of the management of his stock, and his theory for its improvement. I will touch only upon his theory respecting his flock of South Downs. He states, that “to give them the finer and uniform quality of wool down to the fetlock, and an increased quantity over the whole body, he had so disposed of their breeding that they should present their lambs in the fall, instead of the spring.” He founds the improvement of the wool of his sheep on the principle, “that the economy and providence of nature are such, that animals clothed in wool or fur will increase or diminish the quantity of either, according to the climate, which requires more or less wool or fur to warm the body.”

It is on this same principle of the “economy and providence of nature,” that I found the improvement of the wool of my sheep; but my manner of doing it is the reverse of that of Col. Jaques. If my views are right, they may be of some service to wool growers, who would be likely to follow a principle laid down and reduced to practice by a person of so much influence as Col. Jaques. My reasons for adopting a different manner of improvement, may be seen in the following account.

In the fall of 1821, I bought a small number of full-blooded Merino sheep, for the purpose of increasing my flock and raising fine wool. For a number of years I allowed the buck to go with the flock the year round, in order that my lambs should come in the winter, supposing birth at that season would have a natural influence in producing a more abundant quantity, and a much finer quality of wool. In breeding in this way, with the nicest care as to male parentage, I found all my young sheep bore wool of an inferior quality to my original stock. I had nearly made up my mind that our country was not suited to the growth of fine wool, and that in the course of time the offspring of fine Spanish sheep would become assimilated to, and lost in, our native breed. From

conversation and reflection on the subject, I concluded to change my course, and let the month of May be the yearning month, and a few years only were needed to produce a change for the better, as apparent as day from night. All agree that a cold climate is calculated to produce a finer, softer and more abundant covering for the animal creation, than a hot one; and for that reason a lamb that is dropped in May, or the fore part of June, will produce more and better wool than one which comes in the fall or winter. By allowing the male to go to the female in December, we have the whole of the winter for the formation of the animal, and with all the other parts, every fibre of the wool is formed, and the lamb is fitted for a cold climate with a fleece of the finest and warmest kind. After the perfect formation and production of the animal, the heat of our summer produces no change in the quality of the wool, or if any, it is so slight as to be wholly unperceived. Sheep that are at all times kept in a perfectly healthy condition, continue to produce wool equally fine, soft and beautiful, year after year, till visited by old age, and then, like the hair of an aged person, it becomes in some degree more harsh and rigid. By providing for the birth of lambs in the fall, gestation is going on during the heat of summer, and nature, true to her work, prepares the lamb with a hairy, coarse covering suited to a warm climate. STEPHEN SIBLEY.

#### THE CURCULIO.

From the New Genesee Farmer.

We are but partially acquainted with the curculio. Its manner of providing for its young by depositing the nit in our stone fruit, may be familiar to most of our readers,—together with several other particulars: but its food after it has passed into the perfect state, its place of abode during the autumn and winter, and the age it may attain, are things which appear to be very imperfectly known.

If the life of this insect extends to several years, the chief advantage to be derived from having hogs and geese under the trees, must be to prevent its increase. A few of the old ones, indeed, may be trampled to death; but in a large fruit garden, it is likely that most of the young ones will escape; and if to these we add such as immigrate from other places, there will be an increasing array of them in the trees, beyond the reach of the hogs, geese, and poultry.

That such has been the case in our fruit garden, we are much inclined to believe. Six years ago, the hogs were not permitted to run there: and without doubt many hundreds of young curculios were added to those already in possession. We have lately undertaken to lessen their number by catching them on sheets; and we now have about 1700 on the list.

From their difference in size, we infer a difference in age. Further proof, indeed, is wanted; but some of them are not less than four or five times as large as others. If they live through a period of years, they must continue to provide for their offspring in some kind of stone fruit. If we exclude them from the plum tree, the apricot, and nectarine, they will attack the peach and the

cherry. The latter indeed suffers annually to some extent; and a few years ago, owing to a scarcity of other fruit, our peaches were almost entirely destroyed by them.

These considerations have induced us this season to pay more attention to them than in years past; and we have been surprised to find them so numerous. In a late article on this subject, we proposed to jar the trees before the tin troughs were put up; but one, or even a dozen jarrings are not sufficient to get them all down. The troughs, therefore, should be fixed and filled, very early in the season, before the insects ascend the trees, or the labor may be vain. We offer some proof of this remark: For nine mornings in succession, some of our trees had been repeatedly struck with an axe, so as to produce violent concussions, each time obtaining a goodly number of curculios; and yet on the tenth morning, from the same trees, we caught more than double the number that we had at any other time, owing to the cold which benumbed them, and rendered them less able to hold on. From the same trees we have since obtained many more.

Some persons have doubted the efficiency of water troughs; but from what we have seen of them, our confidence has not been diminished in the least. We have frequently caught curculios on the rim, as if waiting for a passage; and have sometimes found them in the water perfectly helpless. Now to prevent them from climbing up, is all that we can reasonably expect from a water trough. It cannot bring them down.

For large trees, the expense of these fixtures will be greater than on small trees, the amount of materials to make them being greater. If a sufficient space be left between the trough and the tree, however, it may remain several years without being taken down—a hole being made in the bottom as soon as the curculio season is over, to let off the water which might collect there, from rain or from melting snow. A small chisel, cutting through the tin into a block of wood held firmly under, would make a sufficient aperture, which might be closed the next spring, and secured by a drop of solder. Three or more wedges pushed up between the trough and the tree fastened by small nails, support the trough: and rags or tow stop up the remaining vacancy. We cap the whole with a coat of mortar to prevent the insects from working their way through the crevices.

Hogs sometimes neglect to eat the fallen fruit when it is very green; but shorter commons will generally bring them to their duty. If the fruit lies long under the tree, the worm escapes into the ground.

#### SHELL MARL UNDER PEAT, IN VERMONT.

To the Editor of the Farmers' Register.

Woodstock, Vermont, March 6, 1841.

\*\*\* Our marl I think is very different from that with which your experiments were made, containing probably a greater per cent. of lime. It lies in the bottom of a "lime pond" of about fifteen acres in extent, and varies in depth from two to twelve feet and upwards, and is covered with a layer of peat from two to seven feet in thickness, with the exception of a pond covering

about three acres, which is supplied in part with water by springs in the bottom, and partly by small streams in the edge of the meadow, which can be conducted off by ditches.

A great portion of the mass is reduced to an impalpable powder, containing apparently much animal matter; and when wet has a very oleaginous feeling. The few shells, whose forms are discernible, are very small, and completely friable; they are very free from any admixture of earth or other foreign substance, and are of a very white color. The deposit consists principally of snail shells, intermixed with a few bivalvular shells, rarely as large as a kidney bean.

It has not been used for agricultural purposes, but has been burned for lime, which was of a very superior quality. CHARLES MARSH, JR.

#### SHEEP POISONED BY THE COMMON RED CHERRY.

From the New Genesee Farmer.

*Messrs. Editors*—Some six or eight years since, while carrying on farming at Rock Stream, one of my orchards, in which was a variety of fruit trees, including a number of the common red sour cherry, became covered with a luxuriant growth of grass, to destroy which, I turned in, about the first of September, fifty or sixty Merino sheep. The animals seemed unusually fond of eating the young cherry sprouts which had sprung up very thick under and about the cherry trees. In less than an hour a large proportion of them were discovered to be diseased, and they were immediately turned out. They staggered continually, pitching forward upon their heads, and often turning entirely over upon their backs. In the course of two or three hours several of them had died; the remainder gradually recovered.

Post mortem examinations proved that their stomachs were compactly filled with the leaves of the cherry sprouts, containing, I presume, prussic acid sufficient to destroy animal life.

E. BARNES.

Note—A neighbor of mine lost a cow from her eating the leaves of a cherry tree, which had been blown down by a wind storm. E. B.

Geneva, May 29, 1841.

#### MISTAKES OF THE NAMES AND CHARACTERS OF GRASSES.

To the Editor of the Farmers' Register.

West-Chester, Pa., July 5, 1841.

I have to acknowledge the receipt of some additional numbers of the Farmers' Register, for which you will please accept my thanks. I am much pleased to observe the spirit of inquiry which you have roused among the farmers and planters, in reference to the various grasses in which they are interested, and particularly the desire manifested to ascertain more accurately the identity of the several species of which they treat in their communications. This is certainly the first step towards a useful discussion, and the only way to arrive at satisfactory conclusions. It is worse than labor lost, and leads to endless confu-

sion, to be arguing the merits or demerits of plants under popular local names, without knowing whether we mean the same thing, and when, in fact, the parties, (as is often the case,) are treating of entirely distinct species. I am led to these remarks, which have been substantially made on a former occasion, and cannot be too often repeated, by observing, in your May number, page 295, a misapprehension which originated in the very evil alluded to—namely, the use of local popular names. In my communication to the 'American Farmer,' of the 8th February, republished in your February number, page 114, I mentioned that our blue grass (*poa compressa*, L.) is often called "wire grass" in this district; and I supposed it might be known by the same name in Virginia. You, however, corrected that error, and showed that the "wire grass," of Virginia, is the *triticum repens*, L., or "couch grass," of the English. This "couch grass" is not much known in Pennsylvania; and hence I was led into the mistaken supposition that it might be rare, also, in Virginia; and that the name of "wire grass" might be applied, there, to the *poa compressa*, as it often is here. A correspondent, in your May number, who signs "J. D." seems to think that I referred to your "wire grass," (*triticum repens*, L.) and that I supposed it to be the same as our "wire grass" (*poa compressa*, L.) Now, I was only misled by the local, common name; and it is that error which I wish to correct. I am well acquainted with both grasses; and never dreamt, for a moment, of confounding our Pennsylvania blue grass (*poa compressa*, L.) with the *triticum repens*, or "couch grass," which, it now appears, is the "wire grass" of Virginia. They are entirely distinct plants: and I hope that, hereafter, there will be no danger of any further confusion between them, among the readers of your highly respectable journal. This little explanation is another evidence of the importance of calling things by their right names, and of understanding exactly what it is we are talking about, in our discussions.

While on this subject, I may as well add, that the valuable *poa pratensis*, L., or smooth meadow grass, is sometimes confounded with another species, nearly allied to it, called by the botanists *poa trivialis*. Thus, in the Kentucky Farmer of June 5, Mr. John Lewis, in an interesting description of the "Kentucky blue grass," says it is "by some called *poa pratensis*, by others *P. trivialis*." These are distinct species; though much resembling each other. The *P. pratensis* is quite smooth, however; and the little skinny membrane, at the top of the sheath, or base of the leaf-blade, called the *ligule*, is short and obtuse; while the stalk and sheaths of *P. trivialis* are sensibly rough, and the *ligule* elongated, and tapering to an acute point. These characters are constant; and, on comparison, will serve readily to distinguish the two species. They often grow together; though the *P. trivialis* is more usually found in moist situations. They are both much esteemed in Europe; but, with us, I think the *P. pratensis* decidedly the more valuable of the two. English writers speak often of another *poa*, which they call *P. angustifolia*; but it is scarcely distinguishable from *P. pratensis*; and is in fact considered, by the best botanists, as nothing more than a variety of that species. So, likewise, in our own country, we sometimes see the *Poa viridis* men-

tioned, which is only a luxuriant state of the same *P. pratensis*, and is often called "green grass."

I trust you and your readers will excuse these hasty remarks. They are merely offered with a view to aid in clearing up some little obscurities which occur in the essays of our agricultural writers. A little attention to these matters, on the part of essayists, will soon remove the difficulties now existing, and render all plain and intelligible.

WM. DARLINGTON.

#### COTTON AND CORN. A DIALOGUE.

From the Liverpool Mercury.

The following clever lines, by Mr. Thomas Moore, are so peculiarly appropriate at this crisis, that, although we believe they have already appeared twice in the Mercury, we shall offer no apology for their repetition:—

Said COTTON to CORN, t'other day,

As they met and exchanged a salute—

(Squire CORN in his cabriolet,

Poor COTTON, half famish'd, on foot:)

"Great Squire, if it isn't uncivil

To hint at starvation before you,

Look down on a hungry poor devil,

And give him some BREAD, I implore you!"

Quoth CORN, then, in answer to COTTON,

Perceiving he meant to make free,

"Low FELLOW, you've surely forgotten

The distance between you and me!

To expect that we, Peers of high birth,

Should waste our illustrious-acres,

For no other purpose on earth

Than to FATTEN CURSED CALICO MAKERS!

"That bishops to bobbins should bend,

Should stoop from their benches' sublimity!

What! SPINNERS and WEAVERS beliidng,

CONTEMPTIBLE DEALERS in dimity?

No; VILE MANUFACTURER, ne'er harbor

A hope to be FED AT OUR BOARDS;

Base offspring of ARKWRIGHT the barber,

What CLAIM can you have upon LORDS?

"No; thanks to the taxes and debt,

And the triumph of paper o'er guineas,

Our race of Lord Jemmies as yet,

May defy your whole rabble of JENNIES!"

So saying, whip, crack, and away,

Went CORN in his CAB through the throng,

So madly, I heard them all say,

Squire CORN would be DOWN before long.

#### ASUBSTITUTE SUGGESTED FOR GREEN CROPS FOR TURNING DOWN.

From the Farmers' Cabinet.

Mr. Editor—We hear much of sowing crops for the purpose of ploughing them down while green. Did it ever occur to the minds of our farmers how many and what heavy "green crops" may be cut from their rushy bottoms, their ditches, their woods; but, above all, from the margins of their rivers and creeks; and which, if buried in the bottom of their furrows, would ferment and become as valuable manure as any that could be grown for the pur-

poor at the expense of ploughing and sowing, and which would enable them to mow these for their cattle, and thus obtain from them an addition to their cattle keep, instead of robbing them of so many acres of fodder? There is upon record an account of an experiment on growing potatoes, when it was found that a single cabbage-leaf laid on every set of the potatoes while planting, produced as large a crop as was taken from the rows dressed with stable manure. Then what would be the result of a thick covering of water-lilies, reeds, or the rushes and weeds from our boggy bottoms? I am at present a *slave* in a dry-goods store in Market street, but shall be free in the spring, when I will ascertain if *agriculture* will not pay for capital expended, as well as *trade*. J. D.

Philadelphia, June 20, 1841.

#### ON TOP-DRESSING.

From the Farmers' Cabinet.

Mr. Editor,—When I first read the article at page 84 of the present volume of the Cabinet, on top-dressing, I thought, indeed, that it was all *theori*, as my friend and neighbor Parnell calls it, and was astonished that any one could advocate a doctrine so foreign to all our past experience, and in the very teeth of every work on agriculture, all of which inculcate the absolute necessity of keeping our dunghills covered with earth, to prevent the escape of the gases, and the loss of about one-half the value of the manure; and upon spreading, to turn it in immediately, for the same best of all reasons; and, as I say, I did heartily despise the notion of top-dressing, much as your correspondent A. had to say in its behalf. This was in the autumn of last year, and up to February of the present spring, I had not changed one jot of my opinion or lost an atom of my prejudice; but, turning again by chance to the article, as I sat by the fire-side one cold and comfortless evening, when I had leisure to examine and reflect upon what he had advanced five months before, a thought struck me, that I could try for myself the truth or error of the scheme, and that I ought to do so, for the benefit of those who had it not in their power to make the experiment so easily as I could; and I therefore came to the resolution to give the thing a fair trial and report upon it in the Cabinet, which I am now prepared to do.

In the upper part of one of my fields I have a gravelly bank with scarcely two inches of mould upon it; there the crop, of whatever kind, had always been poor, even after the most careful cultivation—the hungry subsoil permitting whatever dressing was buried in it, quickly to pass away: I therefore ploughed it as deep as I was able, and immediately sowed upon it a portion of oats; I planted Lima beans on another portion as also some of the emur, mentioned in the late pages of the Cabinet, and immediately covered the surface with the sweepings of the streets, to the thickness of an inch or an inch and a half, and “said nothing to nobody,” as I was fearful my neighbors would have enjoyed a

laugh at my expense, had they seen me expose a coat of manure “to be dissipated by the winds of heaven,” &c. This was late in the month of April, and on this, the 20th day of June, I find upon this hitherto worthless portion of my land, crops that far surpass any that I have ever grown on land of ten times its value, and which have borne the late drought without flinching in the least. On turning up the dung, I find the earth underneath always moist—it seems to operate as a sponge, to hold the evaporation which rises from the subsoil, and to prevent its escape; and the weeds which were indigenous to the soil, appear not to have vegetated, but are kept in abeyance by the heavy crops with which the ground is covered. I need not say that I visit very often my experimental plot, and am more and more convinced of the superior value of top-dressing, on such soils at least, and am free to confess that my mind is now open to conviction. On the most careful examination, I cannot perceive that the coat of manure is at all lessened in bulk by either the rains or exposure; but I can perceive that a shower, which carries the water impregnated with the dung to the roots of the plants, causes them to start away in a most remarkable manner—indeed the immediate effect is surprising. I am, therefore, so far as the present experiment has taught me, convinced of the great advantage of top-dressing: will others try it? I am preparing to sow beet after rye, and shall cover the rows where the seeds are sown, with well-rotted street manure as a top-dressing, instead of burying it in the rows, as heretofore directed, and have no fear of obtaining a good crop.

JOHN KIXSON.

#### COWS, BEFORE AND AFTER CALVING.

From the New England Farmer.

My father's practice until last autumn was to feed his cows for a short time before calving higher than they had previously been fed in order to have their bags well filled at the time of calving, when it was his practice also to give them warm water thickened with meal. The consequence was, this extra feeding caused the udder to fill too soon, and the milk continuing to press in, produced inflammation, and the cows were much troubled with hard and swollen bags. Observing this I last spring requested my father to try an experiment on a cow that the year before had given us much trouble, by *reducing* the quality of her food, instead of *increasing* it, and the result was, she calved before her bag was full. At first she gave but little milk, but in a short time her milk increased, and the udder remained soft and pliant. We have had no trouble on this score since, except with a heifer which calved about the first of July, when the grass was abundant; and this would probably have been prevented, had she been fed at the barn for eight or ten days with hay before calving, and she would then have been saved much pain, and we much trouble.

This subject has received but little consideration; but who can tell what effect one week of pain and suffering, arising from an inflamed udder, might have upon the health of the cow, and the quantity and quality of the milk during her whole life after?

#### CARRIER PIGEONS.

From the Farmers' Cabinet.

On the 12th day of the 6th month, (June,) 1841, R. Bison, son of Evan Bison, of Gwynedd township, Montgomery county, Pennsylvania, about 21 miles N. W. of Philadelphia, sold a pair of common tame pigeons in the Philadelphia market, to a person who was a stranger to him; six days after, one of them returned to its former owner, and on the following morning, the other returned also; and they are now, the 20th of 6th month, (June,) enjoying their old place of residence, very lovingly, 21 miles from the city. During their absence, another pair took possession of their cote, and the first employment they engaged in after their return, was to oust the interlopers, and repossess themselves of their domicile; which they effected much sooner, and at less cost than a lawyer would accomplish a similar business; and they are now in the quiet, peaceable enjoyment of the premises, without, as yet, any appearance of an appeal to a higher tribunal.

Should the purchaser see this article, he can repossess himself of his property, by a call at the pigeon cote, above stated, *without* paying for this advertisement, or being at the trouble or expense of an action of trover.

The following extract from a foreign publication is appended, to show that the carrier, or express pigeon, performs feats far surpassing the above; though it is very remarkable that the *common tame pigeon* should find its way for such a distance unaided by instruction.

*Expresses.*—"The modern system of pigeon expresses possesses an extraordinary interest, as well on account of its rapid means of communicating the most important events as of the curious and laborious mode by which it is set in operation. The birds, by far the most valuable for this purpose, are of the Antwerp breed; although it is not uncommon to train the English pigeons, called dragoons, to carry expresses.

They are trained when very young, or, as they are technically called, *squakers*, to fly between different towns and villages, commencing first at a space of only a few hundred yards, and so on, gradually increasing, until they accomplish the required distance. They are usually trained to fly to intermediate stations, between Dover and London, at which they are succeeded by other relays, but fly, in many instances, the whole distance from other places. The number lost in training is immense. This trade is principally in the hands of the Jews, and the emoluments arising therefrom are very considerable.

There are a few instances in which capi-

talists and others having extensive moneyed and mercantile operations throughout Europe, maintain an establishment of their own, amongst whom is the Baron Rothschild, who, at Dover, rears and trains his own flight of pigeons expresses, with connecting branches throughout Germany, and others parts of the continent.\* The establishment at Dover consists of about 400 birds, with a keeper, whose wages are 35 shillings a week.

The expense of feeding the birds is considerable, as much as 25 shillings a week being consumed at Dover, in beans alone, whilst the entire collection is supposed to have cost at least £2000 sterling. The express is sometimes tied to the middle feather of the tail, by passing a thread with a needle through the stem, but more commonly attached to the leg immediately above the spur. The rapidity of these important expresses may be estimated by the following information obtained from a trainer and proprietor. His pigeons have arrived in London with the news of the winner of the Ascot cup, in fifteen minutes;—from New Market,† in sixty minutes; and from Chichester,‡ bringing the winner of the Goodwood cup, in one hour and fifteen minutes.

At the Ascot races, last year, her Majesty having expressed a wish to see one of these beautiful birds, a carrier pigeon was flown, in her Majesty's presence, from the royal stand, and, to the great delight of the spectators, after indulging in sundry gyrations, darted onwards with its winged intelligence to the metropolis." R.

June 30, 1841.

For the Farmers' Register.

#### THE BOARD OF AGRICULTURE.

To the Gentlemen lately appointed members of the Virginia Board of Agriculture.

Without doubt you have read, (as I have,) the law under which your appointment has been made. But being utterly at a loss myself to determine what is best to be done, I must ask permission of our friend, Mr. Ruffin, who is "one of us,"—thus, publicly to consult you on the subject, and to solicit a brief expression of your opinions through the Register.

The preamble of the law states very truly, "*That the agricultural community have various interests, requiring the fostering care of the state, which should be extended to them according to some system approved by observation, and regulated by experience.*" And the system which the beneficent guardians of these interests have thought proper to adopt is—to require of eight individuals the discharge of more numerous, diversified, and arduous duties than ten times that number of the oldest, most skilful and talented planters and farmers in Virginia could possibly execute, without a

\* It may not be unnecessary to state that the object of these pigeon expresses, is to obtain the earliest news of changes of the money market, in aid of stock-jobbing operations.—Ed. F. R.

† New Market, 60 miles.

‡ Chichester, 65 miles.

previous agricultural survey of our whole state being made by some one or more of their own body. All these duties too are required to be performed at their own expense, as if the honor alone of being a member of the *Virginia Board of Agriculture* were quite sufficient compensation! Now if there be any similar "system approved by observation and regulated by experience," known to any one of you, I will take it as a special favor, if you will publish it; for I myself have never heard of any feat of legislation at all like this act.

Again, admitting that the honor alone be all-sufficient to satisfy those who are most ambitious of such distinction, I would respectfully ask you to say—if you decide upon accepting this honor—how the third enactment is to be executed? It runs thus. "And be it further enacted, that it shall be the duty of the said board to hold one session in each year, at such time and place as may be fixed upon by the board, with the consent of the executive."

Hence it seems that you are not at liberty even to meet, nor to choose either the time nor place of meeting, without first asking permission of the governor and his council, although any man of common sense would probably think that it would puzzle not only the executive, but the most sapient of the framers of this extraordinary law to point out how this executive consent is to be obtained without a previous and unauthorized meeting of the board—the said law having omitted to fix on any time or place for the first meeting. According to my simple understanding, this last enactment completely nullifies the two which precede it; and unless it has some meaning, entirely different from any that I can discern, must render this precious specimen of "*the fostering care of the state of Virginia over the 'various interests of her agricultural community,'*" a subject of universal and well-merited ridicule throughout the United States.

But can nothing be done to remedy the errors,—may I not say the absurdities and injustice of this law as it now stands? Might not the members of the board, if willing to act provided the law can be amended, take upon themselves the responsibility of holding a meeting, say in the city of Richmond, for the purpose of memorializing the next legislature? If you approve of this proposal, I will take the liberty to name October next as the time, and on the first day of the next show and fair of the Henrico Agricultural and Horticultural Society. Such members as could not attend might forward, by some friend, letters expressive of their wishes in regard to the course they desired to be pursued, and thus no time would be lost in attempting to accomplish an object alike demanded by the crying wants of Virginia husbandry and the united voice of all its best friends. **ONE OF YOUR OWN BODY.**

June 26th, 1841.

P. S. Should the time and place of meeting not suit the majority, how shall one more convenient be fixed upon? Four or five years have already been lost, since a bill to establish a Board of Agriculture was first proposed in our legislature, and surely that inexcusable and shameful withholding for such a long period of "*the fostering care of the state, for the various interests of the agricultural community requiring*" that care,

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as the last legislature themselves have acknowledged, ought to satisfy the most inveterate procrastinator among us. Our law-makers have been (if my memory is correct) most diligently engaged, ever since 1798—to the great amusement of most of the other states—in abortive attempts to regulate the affairs of the general government, instead of laboring constantly, as their duty required, to promote the interests of their own state; and the fatal consequence has been, that poor old Virginia has been sinking in character and relative influence ever since. Will the cultivators of the soil who certainly have the power to remedy this crying evil, never apply it? All that is necessary for the purpose would be to choose for a few years only, a set of legislators who would attend to their own business, and cease to occupy almost their whole time, with matters over which they have no power whatever.

[We think that the members of the Board of Agriculture cannot do better than to act upon the suggestion of our correspondent, and hold an informal preliminary meeting.—ED. F. R.]

#### BALDWIN'S PATENT STOCK MILL OR CORN AND COB CRUSHER.

The machine described in the following article (by the editor of the *Kentucky Farmer*), is the invention of a native and resident of Rockbridge county, Virginia. We have heard it well spoken of elsewhere.—ED. F. R.

From the *Kentucky Farmer*.

We beg attention to an advertisement in our columns this week, of a machine to grind corn and cob together. One of these machines has been put in our hands for trial. We attached it to a small drum which gave it about half speed, by which motion it ground up the grain and cob in the most effectual manner, rendering them into a meal rather finer than the hominy we use on our tables. Not a single grain escapes being thoroughly cracked and crushed. There is no dispute in the country as to the economy of feeding stock with ground food; the only question is as to the economy and efficiency of the means used for grinding. Of this machine, though we have an instinctive distrust of such things without trial, we have a favorable opinion, from the small experiment already made with it. It requires a one or two horse power to propel it, and grinds out about ten bushels an hour. It is made in the most durable manner of the best materials, all the most important parts being of cast iron. As those desiring such a machine are invited to examine this in operation, it is not deemed necessary to make a detailed description of it. It is not, however, at all after the fashion of the ordinary bark mill crushers. Its crushing power consists of two pairs of fluted cylinders of hardened cast iron, one pair of which roll upon a cast iron fluted concave. It does the whole business of crushing and grinding the grain and cob at one operation, a great advantage over those machines which only crack the grain and cob to be afterwards ground by another operation.

We think this machine one promising great advantages to those engaged in feeding stock; and we feel the more willing to recommend it as it is warranted, and those not liking it on a fair trial are at liberty to return it. The price \$85 to \$110.

ON THE WAX PROCURED FROM SUGAR CANES.  
BY M. AVEQUIN, DRUGGIST AT NEW ORLEANS.

To the Editor of the Farmers' Register.

Patent Office, July 1, 1841.

The day after your departure from the city, I received my periodicals from France, and among the interesting articles contained in them, noticed one upon the subject of vegetable wax, or "cérosie." I send you a translation, regretting I could not, while you were here, give you some better account of the process by which this new compound is obtained.

The inventor represents the wax as superior to spermaceti, and at the same time much cheaper. Yours, respectfully, H. L. ELLSWORTH.

[Translated from L'Echo du Monde Savant. Paris.]

The sugar-cane, like many other plants, exudes a substance resembling wax, to which the name of vegetable wax has been given.

This matter presents itself under the form of a white powder, adhering to the bark, and may be very easily detached from it, by scraping with the blade of a knife, or any other cutting instrument. In order to purify it, maceration in cold alcohol is employed, at 35° or 36°, by which means it is separated from the "chlorophylle" with which it is mixed. It is insoluble in water, but soluble in boiling ether, from which it is deposited in cooling, under the form of grained crystals; it melts at 82°, and solidifies, at 80°, into a crystalline mass; its density is 0.961 to 10; it is without odor, and combines easily with the alkalies. To procure this substance, to which the discoverer has given the name of "cérosie," the process by scraping would be too lengthy, and not sufficiently economical, M. Avequin proposes to substitute the following. By passing the canes through the mill, to extract the juice, it floats upon the surface of the troughs, under the form of a white powder. The liquor, is gradually heated to the boiling point, without adding lime; the scum is carefully collected, and macerated in weak alcohol, to extract all the particles of sugar, and to destroy the viscosity which would otherwise present obstacles to a thorough washing with pure water; it is then allowed to drain upon cloths, and thoroughly dried. In this state it is reduced to powder; and treated with cold alcohol at 36° in order to separate the "chlorophylle." This process having been renewed several times, the portion which remains is treated with boiling alcohol at 36° which extracts the "cérosie." The solution, collects in a mass during the cooling, from which the alcohol is separated by distillation. Nevertheless the "cérosie," thus obtained, always retains a small proportion of "chlorophylle."

\* So in the manuscript.—ED. F. R.

About 30 quarts of juice from ribbon canes have produced about 22.5 grains of impure cérosie. In another trial M. Avequin procured by scraping, more than two grains of cérosie, in a violet cane.

One acre of canes, produced about 18,000, and consequently about 72 lbs. of cérosie. A plantation which rolls out yearly 300 acres of canes will then furnish 20,000 lbs. of cérosie.

M. Dumas has made an analysis of this substance which is well worthy of fixing the attention of chemists. Three combustions, produced him for its composition,  $C^{90}$ ,  $H^{100}$ ,  $O^2$ . In representing the cérosie, by the formule  $C^{90}$ ,  $H^{100}$ ,  $O^2$ , an alcohol will be produced, which will take rank next to ether, a substance which cérosie very much resembles in all cases.

Note.—The state of heat used is that of Reaumur, in which 80° corresponds to 212°, or boiling water of Fahrenheit.

#### ARTESIAN BORING AT PARIS.

From Silliman's Journal of Science and Arts.

Many years ago, near the Barriere de Grenelle, one of the highest points in Paris, a boring was begun to obtain water. It was discontinued after some years, and again resumed about seven years ago. The result has been successful. We have room only for the following facts, recently communicated by a friend in Paris. The water was at last obtained below the chalk, at the depth of nearly eighteen hundred feet. The torrent of water, about three cubic yards per minute, rises in a copious fountain in the grounds of an *abat-toir*, (slaughter-house,) and is very pure. The column rises from a source one third of a mile below ground, and it spouts thirty feet above the surface. The temperature at the bottom of the boring\* was nearly 83° of Fahrenheit, (that of a hot summer's day, such as is rarely known there on the surface,) thus confirming fully the increase of heat in the interior of the earth, by the average generally observed in similar cases of about 1° for fifty feet of descent, which, at the same rate of increase, would give a fountain of boiling water at two miles from the surface—full ignition of rocks at ten miles, and fusion at two hundred miles; thus leaving a firm crust to preserve the good citizens of Paris from being disturbed by the fear of breaking through, or by the danger of the immediate outburst of the fire.

#### DISCOVERY, IN VIRGINIA, OF THE REGULAR MINERAL SALT FORMATION.

From Silliman's Journal of Science and Arts.

As salt springs and fountains are very numerous in the western and south-western parts of the United States, it was natural to expect that mineral salt would, sooner or later, be discovered. Indeed, strata of salt, in regular position, and roofed and floored by beds of sandstone, were,

\* Which is over eighteen inches wide at the top, and from seven to eight at the bottom, and lined with a metallic tube.

some few years since reported by the Rev. Mr. Parker,\* a missionary among the Indians of the far west, as existing in abundance in a mountain on the Salmon river, among the Rocky mountains; but no mineral salt, in the solid form, had ever been discovered in the United States proper. Now, however, we have the pleasure of announcing this discovery on the authority of the Rev. Stephen Taylor, of Abingdon, Va. His letter to us is dated March 4, 1841, and was soon followed by a large box of salt of the most indubitable character.

It was taken from a well which is "still in the process of being dug, at the salt works about eighteen miles from Abingdon, in the county of Washington," now perhaps within the bounds of Smyth county. From Prof. Wm. B. Rogers, as the geologist of Virginia, we must expect a full scientific account of this salt formation, which, however, appears to have been discovered, as we are informed, since he visited that part of Virginia. The following particulars are derived from a correspondent of Mr. Taylor, and they may not be uninteresting in anticipation of the geological report of Prof. Rogers.

Different persons vary in their report of the depth of the different wells. That of the salt-rock well does not vary much from two hundred and sixty feet. At about thirty feet gypsum has been struck in all the wells, and in the salt-rock well has continued down to the solid bed of salt-rock, occasionally changing to slate and thin veins of blue soft clay. At about two hundred and thirty feet, they arrived at the first symptoms of salt, which from plaster, slate-rock and salt, gradually changed, the salt-rock assuming the predominant part.

The writer remarks, "we have, for thirty feet, continued through this substance, and now find the slate-rock gradually intermixing with it." Several wells have been bored at different times, within short distances of each other. It is said, that from one of them, some years ago, salt borings were extracted; salt water was found at two hundred and twenty-six feet deep.

From a single well, sufficient salt water is now extracted in twenty four hours, to afford one thousand bushels of merchantable salt, which more than supplies the demand in that region of Virginia.

The salt forwarded to us by Mr. Taylor, is highly crystalline in its structure, and except a red color, (obviously derived from iron,†) and occasional fragments of rocks mixed with it, appears to be very pure. Its taste is decidedly and purely saline, without bitterness; when pulverized, the red color almost disappears, and it is tolerably white. Some small pieces were perfectly white. Specimens of gypsum were enclosed in our box; they are of a very decided character—are finely granular in structure, and of a grayish white. We have no account of the other rocks found with the salt, but from the fragments intermixed

presume that sandstone and marly clays are among them.

P. S. A second letter from Rev. S. Taylor, dated May 31, states, on the authority of Mr. W. Findley, who is the proprietor of the well in which the salt is found, that in sinking the well, they penetrated earth and rock about fifty or sixty feet, when they came upon the plaster through which they passed about one hundred and fifty or one hundred and seventy feet. They then struck upon the bed of salt, and penetrated it about fifty or sixty feet without reaching the salt water; they then abandoned the digging, applied the auger, and bored about ten feet more, as he supposes, through the salt, but the mixture of salt water renders it uncertain. The roof then appears to be gypsum but the floor is unknown.

#### LIEBIG'S ORGANIC CHEMISTRY.\*

This work of Professor Liebig has received more respectful attention and applause than any on agriculture that has issued from the press; and whether judiciously applied in this case, or otherwise, this reception is indicative of greatly increased appreciation of agricultural chemistry. From the investigation of that branch of agricultural science, the best results must follow. And no work have we yet seen that furnished to agriculturists a more abundant store of scientific facts, and more subjects for thinking, and for further investigation, than the work now under consideration. But highly as we estimate the author's scientific researches, and his chemical facts, we are compelled to dissent from his theoretical views thence deduced. And yet, it would seem, from the several highly eulogistic notices which have preceded or immediately followed the republication of the work in this country, that the theoretical and new, and, as we deem them, the unsustained views, had chiefly served to command applause; and had eclipsed, in the eyes of the greatest admirers, the many interesting and important chemical facts, which (though used sometimes for wrong deductions) may serve, upon better understanding and more careful application, as the foundation of the most useful and important steps towards agricultural improvement. We therefore earnestly recommend to scientific agriculturists and to chemists to study Liebig; and while they should not receive his theoretical deductions without well weighing his train of reasoning, that they will treasure up and profitably apply the many important and unquestionable lights which he has furnished for reasoning, and for practical application.

In the first sketch of the 'Essay on Calcareous Manures,' which was published in 1821,† was the earliest assertion made in this country of the

\* In conversation with the senior editor, Mr. Parker mentions (see his *Travels*, p. 108) seeing the salt a mile off on the left; he was too ill to climb up to it, but the Indians procured some for him, which was pure and crystallized.

† It is now ascertained that rock-salt is sometimes colored by animalcules.

\* "Organic Chemistry in its application to Agriculture and Physiology. By Justus Liebig, M. D., Ph. D., F. R. S., M. R. I. A., &c., Professor of Chemistry in the University of Giessen. Edited from the manuscript of the author, by Lyon Playfair, Ph. D. First American edition, with an Introduction, Notes, and Appendix, by John W. Webster, M. D., Professor of Chemistry in Harvard University. Cambridge 1841."

† In the *American Farmer*, vol. iii., page 312.



doctrine of *acid soils*—which doctrine was set forth still more at length in 1832, when that essay was republished, and enlarged to a volume. The doctrine was before that time not only unsupported by authority, but utterly condemned by all that could be considered as good authority. It was advanced by the author hesitatingly, because of his want of the scientific attainments needed to pursue the discovery, and to establish it by proof direct and beyond dispute. And the assertion was met, by the few men of science who condescended to notice it at all, by flat denial of any acid ingredient existing in soil, or by a jeering demand of the proof to be furnished by exhibition of the separated acid.

But before another edition of that essay had been issued (in 1835) some of the most distinguished European chemists had ascertained the now generally conceded existence of an acid ingredient of soils in general, which was at first called *humic acid*. And now there are as few persons who would deny or even doubt the existence of acid in soil, as previously could have been found to give it credence on all the proof that could be adduced. It would be even amusing to compare the laborious indirect mode of proof (or want of direct evidence) brought at first to sustain the new position, with the now universal admission of the general existence of humic acid, or some acid principle, in soils.

But, after all, it was not that a new constituent part of soil was discovered in humic acid, or humin, but that acid properties were found in the previously well-known ingredient, called by Davy "vegetable extract," and "humus" by earlier French authors. This substance is the product of vegetable matter decaying in soil, and which necessarily must show as many shades of difference of texture and condition as there are minute steps in the progress of vegetable decomposition and decay. The chemists, however, were delighted with the discovery, when announced in Europe by Berzelius, Boullay, and other scientific names, and hastened to make its further investigation. Each gave a new name to every newly observed difference of condition, or chemical composition; and the consequence is, that so many new names have been applied, and as many different substances claimed to exist, that the whole subject is now as much involved in the confusion of knowledge, as before in ignorance. Thus, this substance, known to and described by Davy as but *one*, vegetable extract, and considered by him as the direct nutriment of plants, is now treated of under many names, and each claimed to designate a different chemical substance. Thus have been brought into use, and used to obscure and confuse rather than instruct, the terms *humin* and *humic acid*, *geine* and *geic acid*, *ulmin*, *coal of humus*, *extract of humus*, *carbonaceous mould*, *apotheme*, *crenic* and *apocrenic acids*, &c. &c. We would prefer to go back to the older and more simple nomenclature, and therefore approve of Liebig's. He says—

"The modifications of *humus* which are soluble in alkalies are called *humic acid*; while those which are insoluble have received the designations of *humin* and *coal of humus*." (p. 57.) "Humus is described by chemists as a brown substance, easily soluble in alkalies, but only slightly soluble in water, and produced during the decomposition of vegetable matters by the action of acids or alkalies."—(p. 57.)

The humin and humic acid produced by chemical and by natural decomposition have the same constituent parts, but varying much in proportions; and thus even the same name (many as are the names) does not indicate the same chemical compound.

"*Humic acid* formed by the action of hydrate of potash upon saw-dust contains, according to the accurate analysis of Peligot, 72 per cent. of carbon, while the humic acid obtained from turf and brown coal contains, according to Sprengel, only 68 per cent.; that produced by the action of dilute sulphuric acid upon sugar, 57 per cent. according to Malaguti; and that, lastly, which is obtained from sugar or from starch, by means of muriatic acid, according to the analysis of Stein, 64 per cent. All these analyses have been repeated with care and accuracy, and the proportion of carbon in the respective cases has been found to agree with the estimates of the different chemists above mentioned; so that there is no reason to ascribe the difference in this respect between the varieties of *humus* to the mere difference in the methods of analysis or degrees of expertness of the operators."—(p. 60.)

In a case where the most learned chemists so much differ and dispute, we shall not be so presumptuous as to offer an opinion in competition. But, until they shall settle their differences on this subject, and come to some general agreement which may be considered as received authority, it may be permitted to us, in common with the unlearned, to reject all these refinements. We shall therefore consider *humus* as vegetable extract and decaying matter generally; and *humin* as the less soluble, and *humic acid* as the more soluble portion.

All plants and vegetable products are composed principally of carbon, oxygen and hydrogen; of a very small proportion of nitrogen, (or azote,) and of small proportions of earths, alkalies, and metallic oxides.\* The first three, and by far the larger of these constituents, are furnished in unlimited quantities by the atmosphere; that is, carbon by the carbonic acid of the atmosphere, and hydrogen and oxygen are the two constituents of water. Nitrogen was not supposed until lately to be a constituent of but few vegetable matters. But now, and by Liebig, it is supposed to be universally present, though in very small proportions, and to be essential to their existence. This constituent is also furnished in profusion by the atmosphere, of which, nitrogen forms 80 per cent. It is then only the other very small constituents, the earths, alkalies, and metallic oxides, left in the ashes of plants after burning, that are not furnished by the atmosphere, and in unlimited quantity; and these only must necessarily have been supplied to growing plants altogether and directly by the soil which the roots pervaded.

\* The most important and very far the larger constituent parts of all plants, are furnished by or found in the atmosphere, and are there, of course, in a gaseous form, or presented as aeriform fluids. Oxygen and nitrogen, two gases, in certain uniform proportions, compose the atmospheric air. Carbonic acid, a gas, and always present in small quantities in the atmosphere, is a compound of carbon and oxygen. Hydrogen, which when separate is known only in gaseous form, when combined with oxygen forms water, which is held dissolved, and also as an aeriform fluid, when in the atmosphere. Ammonia, which Liebig considers so important a supporter of vegetable growth, is also a gas, and is a combination of nitrogen and hydrogen.

In former times there was much dispute as to what was the *food of plants*. Some contended that it was water alone; others air. Tull maintained, and his disciples thought he had proved, that finely divided earth was the food of plants, and that ploughing might serve as a perfect substitute for manure. Davy laid down that *vegetable extract*, soluble in water, was the food of plants; and this seemed to be clearly established both by his reasoning and experiments. This vegetable extract, when afterwards known under the names of humin, humic acid, and all the combinations of the latter with alkaline earths, &c., was still supposed to furnish *directly* to the roots much the greater part of the food of plants; the balance, not so received, being the carbonic acid absorbed by the leaves from the atmosphere, and of which the plant retains and assimilates the carbon, and discharges its other constituent, the oxygen, to purify the atmosphere. It is one of the most admirable provisions of nature, that while the breathing of animals, and the exhalations of all decaying matter, furnish carbonic acid to the atmosphere, plants are continually absorbing it by their leaves, and returning oxygen instead. For though the leaves give out nitrogen gas in some cases, and carbonic acid gas always at night, still the discharge of oxygen gas is very far the greatest. And thus stood received opinions—that plants received part of their sustenance from the atmosphere, through their leaves, but a larger part by directly drawing from the soil the soluble vegetable (or animal) matters, there present.

But Liebig maintains (and it had indeed been previously maintained by some others recently,) that vegetable extract, humus, or putrescent manures, whether naturally or artificially applied, and all of which change to or supply humin and humic acid, do not act *directly*, in the slightest degree, as the food of plants; but only, by combining with the oxygen of the atmosphere and forming with it carbonic acid, which is received *only* in the early stage of growth, and in but small quantity, by the roots, and much more abundantly, and then exclusively, by the leaves of plants after they are formed. Now if the author meant that humus was first decomposed, and furnished carbon to the roots of plants by the carbonic acid evolved, the practical results would not be materially different. For it still would be, as upon the other supposition, that the greater the quantity of humus, (or manure serving to form humus,) the greater the supply of carbon to the growing plants. But not so. It would indeed seem that the author considers the supply of carbon through the roots as so small, as to permit the inference that it is of very little importance. And the main and indeed almost entire supply being from the atmosphere, and through the leaves, it seems also to follow that the vegetable matters or manure, acting by first evolving carbonic acid into the atmosphere, would be almost as likely to give it to plants on the adjacent field, or adjacent farm, as to plants growing immediately above the place of extrication. For, when evolved, and loose above the surface of the earth, the carbonic acid gas must be carried off and diffused by the slightest breeze, and still more rapidly by high winds. Yet we all know that the beneficial effects of manure will show on, and be limited to plants standing on almost the precise space to which the manure was applied.

It is only while plants are very young, indeed before their leaves are developed, that Liebig supposes the roots to draw carbonic acid from the earth.

"Humus acts in the same manner in a soil permeable to air as in the air itself; it is a continued source of carbonic acid, which it emits very slowly. An atmosphere of carbonic acid, formed at the expense of the oxygen of the air, surrounds every particle of decaying humus. The cultivation of land, by tilling and loosening the soil, causes a free and unobstructed access of air. An atmosphere of carbonic acid is, therefore, contained in every fertile soil, and is the first and most important food for the young plants which grow in it."—(p. 105.)

"By loosening the soil which surrounds young plants, we favor the access of air, and the formation of carbonic acid; and on the other hand the quantity of their food is diminished by every difficulty which opposes the renewal of air. A plant itself effects this change of air at a certain period of its growth. The carbonic acid, which protects the undecayed humus from further change, is absorbed and taken away by the fine fibres of the roots, and by the roots themselves; this is replaced by atmospheric air, by which process the decay is renewed, and a fresh portion of carbonic acid formed. A plant at this time receives its food, both by the roots, and by the organs above ground, and advances rapidly to maturity.

"When a plant is quite matured, and when the organs, by which it obtains food from the atmosphere, are formed, the carbonic acid of the soil is no further required.

"Deficiency of moisture in the soil, or its complete dryness, does not now check the growth of a plant, provided it receives from the dew and the atmosphere as much as is requisite for the process of assimilation. During the heat of summer it derives its carbon exclusively from the atmosphere."—(p. 106.)

"Substances, containing a large proportion of carbon, are excreted by the roots and absorbed by the soil. Through the expulsion of these matters unfitted for nutrition, therefore, the soil receives again the greatest part of the carbon, which it had at first yielded to the young plants as food, in the form of carbonic acid."—(p. 116.)

"Plants do not exhaust the carbon of a soil, in the normal condition of their growth; on the contrary, they add to its quantity. But if it is true that plants give back more carbon to a soil than they take from it, it is evident that their growth must depend upon the reception of nourishment from the atmosphere. The influence of humus upon vegetation is explained by the foregoing facts, in the most clear and satisfactory manner.

"Humus does not nourish plants, by being taken up and assimilated in its unaltered state, but by presenting a slow and lasting source of carbonic acid, which is absorbed by the roots, and is the principal nutriment of young plants at a time when, being destitute of leaves, they are unable to extract food from the atmosphere."—(p. 116.)

In a previous passage it is said—

"The facts which we have stated in the preceding pages prove, that the carbon of plants must be derived exclusively from the atmosphere."—(p. 72.)

These passages show clearly that the author considers the carbon furnished through the roots (or directly from the soil) as very small. But other passages show that he supposes even the small quantity of carbon so taken up by the roots, to be more than replaced in the soil by subsequent excretions of the roots; and that under

culture and the continued growth of plants, the humus in the soil may even increase.

"It is certain that the gummy and resinous excrements observed by *Macaire-Princep* could not have been contained in the soil; and as we know that the carbon of a soil is not diminished by culture, but, on the contrary, increased, we must conclude, that all excrements which contain carbon must be formed from the food obtained by plants from the atmosphere."

"Both views [of the excreting action of the roots of plants] explain how it happens that after corn, corn cannot be raised with advantage, nor after peas, peas; but they do not explain how a field is improved by lying fallow, and *this in proportion to the care with which it is tilled and kept free from weeds*; nor do they show how a soil gains carbonaceous matter by the cultivation of certain plants, such as lucerne and esparsette.

"Theoretical considerations on the process of nutrition, as well as the experience of all agriculturists, so beautifully illustrated by the experiments of *Macaire-Princep*, leave no doubt that substances are excreted from the roots of plants, and that these matters form the means by which the carbon received from humus in the early period of their growth, is restored to the soil."—(pp. 210, 211.)

"Each of these [successive crops of] plants, during its growth, returns to the soil a certain quantity of substances containing carbon, which are gradually converted into humus, and are for the most part equivalent to as much carbon as the plants had formerly extracted from the soil in the state of carbonic acid."—(p. 216.)

The author endeavors to prove his position, that humus furnishes no food to plants directly, or otherwise than by evolving carbonic acid, by several ingenious arithmetical calculations, founded on the chemical proportions of the different substances in question. Thus, taking as data the slight solubility of humic acid, (as artificially produced by chemists,) he infers that all the known quantity of rain, that falls on an acre, could not possibly dissolve enough humic acid to furnish the carbon contained in the vegetable growth. He shows, by the like kind of calculation, founded on the lime and other substances found in the ashes of plants, with which humic acid might have formed *humates* and thus entered the plants, that such supplies are necessarily so small as to make good his position. But this mode of calculation, or reasoning, is altogether inadmissible—and if admitted, would lead to the most absurd consequences. For example—it has been calculated (by Dundonald) that all the lime taken up by the growth of an acre in a year does not exceed 80 pounds in the form of carbonate. Now it would be as legitimate a deduction from this fact, as are the arithmetical deductions of Liebig, that 80 pounds of carbonate of lime, equally and thoroughly diffused, would be enough to manure an acre for one crop, and that any increase of quantity would be in excess. Yet we know that 10 times 80 pounds would scarcely be perceptible in effect, and that 50 or 100 times as much would give no excess.

Again—by using the like data and mode of calculation, it might be shown by the chemical analysis of the products, that all the food of plants derivable from a certain soil in one year, upon any particular theory of nutrition, did not exceed the quantity that 20 loads (for example) of putrescent manure would supply. Yet the vegetable matters, decomposed or in the course of decomposition, previously in the soil, might have

amounted to 40 loads; and yet not only would the 20 loads applied be not in excess, and therefore useless, but twice or thrice as much would have been still more beneficial. According to the calculation, the addition of manure, in any quantity, ought to be superfluous, and therefore useless.

The author also endeavors to maintain his ground by the assumed fact, that cultivated lands, from which crops are taken off, and no sufficient return made, still increase in their stock of carbon, notwithstanding the removal of it in the crops. It is thus he speaks:

"Let us now inquire whence the grass in a meadow, or the wood in a forest, receives its carbon, since there no manure,—no carbon,—has been given to it as nourishment? and how it happens, that the soil, thus exhausted, instead of becoming poorer, becomes every year richer in this element?

"A certain quantity of carbon is taken every year from the forest or meadow, in the form of wood or hay, and, in spite of this, the quantity of carbon in the soil augments; it becomes richer in humus.

"It is said, that in fields and orchards all the carbon which may have been taken away, as herbs, as straw, as seeds, or as fruit, is replaced by means of manure; and yet this soil produces no more carbon than that of the forest or meadow where it is never replaced. It cannot be conceived that the laws for the nutrition of plants are changed by culture,—that the sources of carbon for fruit or grain, and for grass or trees, are different.

"It is not denied that manure exercises an influence upon the development of plants; but it may be affirmed with positive certainty, that it neither serves for the production of the carbon, nor has any influence upon it, because we find that the quantity of carbon produced by manured lands is not greater than that yielded by lands which are not manured. The discussion as to the manner in which manure acts has nothing to do with the present question, which is the origin of the carbon. The carbon must be derived from other sources; and as the soil does not yield it, it can only be extracted from the atmosphere."—(pp. 68, 69.)

Now, in the first place, it is not correct to say that land receives "no manure," because foreign manure is not brought and applied to it. A forest or a meadow, though yielding for removal part of the produce yearly, yet, from the portion left to fall and rot, may receive more carbon than is taken away. For so much carbon is certainly derived from the atmosphere through the leaves of growing plants, (according to every different theory,) that more than half the whole products may be taken away, and the other half may supply as much humus and carbon, or perhaps even cause an increase of both. But if the draught upon the land be carried beyond the amount of the supply, the stock of humus (and of productive power) will be reduced in proportion. Of this result, however rare in Germany, and on all well-regulated farms, Professor Liebig could have thousands of proofs on the severely cropped lands of this country. We have also known forest land to be much reduced in productive power, even before being cleared for cultivation, by its being partially and continually robbed of its wood for fuel, during many years previously.

But however we may differ as to the immediate source, or mode of supply of carbon to plants, either theory will teach that the supply is unbounded. The atmosphere contains about one per cent. of carbonic acid gas, which offers an

inexhaustible supply to growing plants. The furnishing of the two other largest constituent parts of all plants, oxygen and hydrogen, is also easy, and the supply unlimited, as water is composed of them, and is drawn up by the roots in any requisite quantity. But still, a very small proportion of the water received by a plant is decomposed by it, and the hydrogen and oxygen assimilated, and made part of its solid substance. Just as much however is so assimilated as is needed, and as the vigor of the plant can make use of, and appropriate. The nitrogen is as certainly and as bountifully supplied in different modes; and the small quantity of the earthy, alkaline and metallic substances necessary to the existence of plants are generally present in sufficient quantity.

And here let us glance at a difficulty which attends the view thus taken, and which difficulty is far greater upon Liebig's doctrine of the exclusive supply of carbon through the leaves, and which he does not attempt to remove. If to plants are offered by the atmosphere unlimited supplies of carbon, and also of nitrogen (as will be shown presently,) and of hydrogen and oxygen in rain water—and as the earth and air rarely fail to furnish enough of the essential earthy or other salts—why is it that exuberant productiveness is not shown on every soil—and that, on the contrary, the product of each soil is *strictly limited* by the measure of its own fertilizing ingredients? We cannot explain this mystery to our own satisfaction. But the nearest approach to explanation perhaps is, that the force of growth given by the soil enables the plant to seize upon and appropriate a certain increased but definite proportion of the inexhaustible treasures of the atmosphere. And thus, even though three parts out of four of the growth may perhaps be due to principles furnished by the atmosphere and, by water, still that the benefit thence derived is nevertheless strictly limited by, and in proportion to, the measure of the fertility of the soil. For every addition of fertility, then, made to the soil, by manuring, three times as much effect will be added by the bounty of nature; and if man gives nothing, and removes all, then the richer bounties of nature are necessarily also withheld.

But whether furnished altogether through the leaves, or partly through the roots, the carbonic acid is decomposed, and its carbon fixed in the plant, and its oxygen evolved through the leaves as gas.

Hydrogen and oxygen are usually found in plants in the precise proportions in which these two elements form water. But in some plants the hydrogen is in excess, and more rarely the oxygen. In all cases, the plant decomposes the water needed for combination and assimilation, fixes its elements, and discharges into the air the excess of gas not combined.

Next will be considered our author's views of the source and manner of the supply of nitrogen to growing plants.

Nitrogen forms but a small proportion, but yet an essential part of all plants. As it is a large constituent of all animal bodies, so it seems to furnish qualities to vegetables which are similar to those of animal matter, and is most abundant in the parts of vegetables (as the seeds) which are most nutritious, as food to animals, and as ma-

nures to other cultivated plants. It is a constituent part of the vegetable albumen, and the gluten of wheat; and generally, because of the richness it indicates, it is a constituent of plants much more important in proportion to quantity than their other elements.

As nitrogen gas is one of the two constituents of the atmosphere, it would seem, at first view, that there was the most unlimited and universally pervading supply of this essential and richest of the elements of vegetables. But the laws of nature do not permit this one of her bounties to be thus directly drawn upon. Liebig says—

“We have not the slightest reason for believing that the nitrogen of the atmosphere takes part in the processes of assimilation of plants and animals; on the contrary, we know that many plants emit the nitrogen which is absorbed by their roots, either in the gaseous form, or in solution in water. But there are, on the other hand, numerous facts, showing, that the formation in plants of substances containing nitrogen, such as gluten, takes place in proportion to the quantity of this element which is conveyed to their roots in the state of ammonia, derived from the putrefaction of animal matter.”—(p. 126, 7.)

“Plants, as we know, grow perfectly well in pure charcoal, if supplied at the same time with rain-water. Rain-water can contain nitrogen only in two forms, either as dissolved atmospheric air, or as ammonia. Now, the nitrogen of the air cannot be made to enter into combination with any element except oxygen, even by employment of the most powerful chemical means.”—(p. 126.)

“Ammonia, too, is capable of undergoing such a multitude of transformations, when in contact with other bodies, that in this respect it is not inferior to water, which possesses the same property in an eminent degree. It possesses properties which we do not find in any other compound of nitrogen; when pure, it is extremely soluble in water; it forms soluble compounds with all the acids; and when in contact with certain other substances, it completely resigns its character as an alkali, and is capable of assuming the most various and opposite forms.”—(p. 127.)

“We find this nitrogen in the atmosphere, in rain-water, and in all kinds of soils, in the form of ammonia, as a product of the decay and putrefaction of preceding generations of animals and vegetables. We find, likewise, that the proportion of azotized matters in plants is augmented by giving them a larger supply of ammonia conveyed in the form of animal manure.

“No conclusion can then have a better foundation than this, that it is the ammonia of the atmosphere which furnishes nitrogen to plants.”—(p. 146.)

Thus reasoning that the vast magazine of nitrogen in the atmosphere, though the only source of the supply, furnishes none directly to plants, and that they are supplied immediately only from the soil and through their roots, the author proceeds to point out the true sources of the necessary supply.

“Let us picture to ourselves the condition of a well-cultured farm, so large as to be independent of assistance from other quarters. On this extent of land there is a certain quantity of nitrogen contained both in the corn and fruit which it produces, and in the men and animals which feed upon them, and also in their excrements. We shall suppose this quantity to be known. The land is cultivated without the importation of any foreign substance containing nitrogen. Now, the products of this farm must be exchanged every year for money, and other necessities of life, for bodies, therefore, which contain no nitrogen. A certain proportion of nitrogen is exported

with corn and cattle; and this exportation takes place every year, without the smallest compensation; yet after a given number of years, the quantity of nitrogen will be found to have increased. Whence, we may ask, comes this increase of nitrogen? The nitrogen in the excrements cannot reproduce itself, and the earth cannot yield it. Plants, and consequently animals, must, therefore, derive their nitrogen from the atmosphere.

"The last products of the decay and putrefaction of animal bodies present themselves in two different forms. They are in the form of a combination of hydrogen and nitrogen, *ammonia*, in the temperate and cold climates, and in that of a compound, containing oxygen, *nitric acid*, in the tropics and hot climates. The formation of the latter is preceded by the production of the first. Ammonia is the last product of the putrefaction of animal bodies; nitric acid is the product of the transformation of ammonia. A generation of a thousand million men is renewed every thirty years: thousands of millions of animals cease to live, and are reproduced in a much shorter period. Where is the nitrogen which they contained during life? There is no question which can be answered with more positive certainty. All animal bodies, during their decay, yield the nitrogen which they contain to the atmosphere, in the form of ammonia. Even in the bodies buried sixty feet under ground in the churchyard of the Eglise des Innocens, at Paris, all the nitrogen contained in the adipocere was in the state of ammonia. Ammonia is the simplest of all the compounds of nitrogen; and hydrogen is the element for which nitrogen possesses the most powerful affinity.

"The nitrogen of putrefied animals is contained in the atmosphere as ammonia, in the form of a gas which is capable of entering into combination with carbonic acid, and of forming a volatile salt. Ammonia in its gaseous form as well as all its volatile compounds is of extreme solubility in water.\* Ammonia, therefore, cannot remain long in the atmosphere, as every shower of rain must condense it, and convey it to the surface of the earth. Hence, also, rain-water must, at all times, contain ammonia, though not always in equal quantity. It must be greater in summer than in spring or in winter, because the intervals of time between the showers are in summer greater; and when several wet days occur, the rain of the first must contain more of it than that of the second. The rain of a thunder-storm, after a long protracted drought, ought for this reason to contain the greatest quantity, which is conveyed to the earth at one time."—(pp. 128, 130.)

And here let us observe the remarkable contrast presented by the two principal new positions of the author, in regard to two of the most important supplies of this material to plants. Nitrogen, which, as part of the atmosphere, surrounds a plant always, and is present in the greatest imaginable profusion, cannot enter its body directly, or even indirectly (in the form of ammonia) except from the soil and through the roots. On the contrary, the humus, or decayed vegetable matter or putrescent manure, in the soil, as Liebig maintains, furnishes only carbonic acid to plants, and that almost exclusively through the atmosphere and by way of the leaves.

Though chemists have not been able to detect ammonia in atmospheric air, because of the very small proportion, it is found with certainty when collected from the atmosphere by the descent of rain and snow and therein condensed. Liebig estimates the usual proportion of ammonia in

rain and snow water to be one-fourth of a grain to the pound of water; and then, by arithmetical calculation, (founded on the annual quantity of rain,) he deduces that 65 Hessian pounds of ammonia would be the annual supply to the Hessian acre; which quantities, reduced to American weight and measure, are equal to 116 pounds of ammonia to the acre, derived solely from the atmosphere. This would furnish more nitrogen than a crop on the same land of wood, hay, or beets, but less than would be contained in the roots, straw and grain of a crop of wheat. (p. 132.)

This is a most important fact—and is still so, even if the quantity of ammonia thus supplied to the soil be reduced to less than half of Liebig's estimate, as is done upon the authority of other chemical experiments, as is stated in the June number of the Quarterly Journal of Agriculture, by an intelligent writer and chemist. Upon either supposition, it is a bountiful additional supply, from foreign sources and materials, of highly fertilizing principles, to every cultivator; and who, at the same time, may by proper care prevent the escape of ammonia from the materials on his own farm into the general atmosphere.

"It is worthy of observation, that the ammonia contained in rain and snow water, possessed an offensive smell of perspiration and animal excrements,—a fact which leaves no doubt respecting its origin."—(p. 133.)

"Any one may satisfy himself of the presence of ammonia in rain, by simply adding a little sulphuric or muriatic acid to a quantity of rain-water, and evaporating this nearly to dryness in a clean porcelain basin. The ammonia remains in the residue, in combination with the acid employed; and may be detected either by the addition of a little chloride of platinum, or more simply by a little powdered lime, which separates the ammonia, and thus renders its peculiar pungent smell sensible. The sensation which is perceived upon moistening the hand with rain-water, so different from that produced by pure distilled water, and to which the term *softness* is vulgarly applied, is also due to the carbonate of ammonia contained in the former.

"The ammonia, which is removed from the atmosphere by rain and other causes, is as constantly replaced by the putrefaction of animal and vegetable matters. A certain portion of that which falls with the rain, evaporates again with the water; but another portion is, we suppose, taken up by the roots of plants, and, entering into new combinations in the different organs of assimilation, produces albumen, gluten, quinine, morphia, cyanogen, and a number of other compounds containing nitrogen."—(pp. 133-4.)

Carbonic acid gas, which also is always diffused through the atmosphere, is readily absorbed by water; and hence all rain water contains carbonic acid, which of course must unite, according to its quantity, with the ammonia present therein. This would furnish to the soil and to plants carbonate of ammonia, which is a very volatile solid, dissolved, instead of pure ammonia, a gas absorbed and temporarily condensed by water. However, if growing plants were ready to take up the supply of either as fast as furnished by rains, the ultimate result would probably not be affected by the different conditions of the ammonia. But, if no plants were ready to receive the supply, we infer that much the greater part, in either case, would be lost by evaporation and going off into the atmosphere.

\* "According to Dr. Thomson, water absorbs 780 times its bulk of ammonia."

"The employment of animal manure in the cultivation of grain, and the vegetables which serve for fodder to cattle, is the most convincing proof that the nitrogen of vegetables is derived from ammonia. The quantity of gluten in wheat, rye, and barley, is very different; these kinds of grain also, even when ripe, contain this compound of nitrogen in very different proportions. Proust found French wheat to contain 12.5 per cent. of gluten; Vogel found that the Bavarian contained 24 per cent.; Davy obtained 19 per cent. from winter, and 24 from summer wheat; from Sicilian 21, and from Barbary wheat 19 per cent. The meal of Alsace wheat contains, according to Boussingault, 17.3 per cent. of gluten; that of wheat grown in the "Jardin des Plantes" 26.7, and that of winter wheat 33.3 per cent. Such great differences must be owing to some cause, and this we find in the different methods of cultivation. An increase of animal manure gives rise not only to an increase in the number of seeds, but also to a most remarkable difference in the proportion of the gluten which they contain.

"*Animal manure, as we shall afterwards show, acts only by the formation of ammonia.* One hundred parts of wheat grown on a soil manured with cow-dung (a manure containing the smallest quantity of nitrogen,) afforded only 11.95 parts of gluten, and 64.84 parts of amylin, or starch; whilst the same quantity, grown on a soil manured with human urine, yielded the maximum of gluten, namely 35.1 per cent. Putrified urine contains nitrogen in the forms of carbonate, phosphate, and lactate of ammonia and in no other form, than that of ammoniacal salts.

"Putrid urine is employed in Flanders as a manure with the best results. During the putrefaction of urine, ammoniacal salts are formed in large quantity, it may be said exclusively; for under the influence of heat and moisture urea, the most prominent ingredient of the urine, is converted into carbonate of ammonia. The barren soil on the coast of Peru is rendered fertile by means of a manure called *guano*, which is collected from several islands on the South Sea.\* It is sufficient to add a small quantity of guano to a soil, which consists only of sand and clay, in order to procure the richest crop of maize. The soil itself does not contain the smallest particle of organic matter, and the manure employed is formed only of urate, phosphate, oxalate, and carbonate of ammonia, together with a few earthy salts."—(pp. 136, 137.)

"The urine of men and of carnivorous animals contains a large quantity of nitrogen, partly in the form of phosphates, partly as urea. Urea is converted during putrefaction into carbonate of ammonia, that is to say, it takes the form of the very salt which occurs in rain-water. Human urine is the most powerful manure for all vegetables containing nitrogen; that of horses and horned cattle contains less of this element, but infinitely more than the solid excrements of these animals."—(p. 138.)

"The solid excrements of animals contain comparatively very little nitrogen, but this could not be otherwise. The food taken by animals supports them only in so far as it offers elements for assimilation to the various organs, which they may require for their increase or renewal. Corn, grass, and all plants, without exception, contain azotized substances. The quantity of food, which animals take for their nourishment, diminishes or increases in the same proportion, as it contains more or less of the substances contain-

ing nitrogen. A horse may be kept alive by feeding it with potatoes, which contain a very small quantity of nitrogen; but life thus supported is a gradual starvation; the animal increases neither in size nor strength, and sinks under every exertion."—(p. 139.)

The deductions and practical applications to be made from Liebig's chemical facts in regard to nitrogen and ammonia are so important, that we may be excused from quoting still more at length.

"As it is evident that the nitrogen of the plants and seeds used by animals as food must be employed in the process of assimilation, it is natural to expect that the excrements of these animals will be deprived of it, in proportion to the perfect digestion of the food, and can only contain it when mixed with secretions from the liver and intestines. Under all circumstances, they must contain less nitrogen than the food. When, therefore, a field is manured with animal excrements, a smaller quantity of matter containing nitrogen is added to it than has been taken from it in the form of grass, herbs, or seeds. By means of manure, an addition only is made to the nourishment which the air supplies.

In a scientific point of view, it should be the care of the agriculturist so to employ all the substances containing a large proportion of nitrogen which his farm affords in the form of animal excrements, that they shall serve as nutriment to his own plants. This will not be the case unless those substances are properly distributed upon his land. A heap of manure lying unemployed upon his land would serve him no more than his neighbors. The nitrogen in it would escape as carbonate of ammonia into the atmosphere, and a mere carbonaceous residue of decaying plants would, after some years, be found in its place.

All animal excrements emit carbonic acid and ammonia, as long as nitrogen exists in them. In every stage of their putrefaction an escape of ammonia from them may be induced by moistening them with a potash ley; the ammonia being apparent to the senses by a peculiar smell, and by the dense white vapor which arises when a solid body moistened with an acid is brought near it. This ammonia evolved from manure is imbibed by the soil either in solution in water, or in the gaseous form, and plants thus receive a larger supply of nitrogen than is afforded to them by the atmosphere.

But it is much less the quantity of ammonia, yielded to a soil by animal excrements, than the form in which it is presented by them, that causes their great influence on its fertility. Wild plants obtain more nitrogen from the atmosphere in the form of ammonia than they require for their growth, for the water which evaporates through their leaves and blossoms, emits, after some time, a putrid smell, a peculiarity possessed only by such bodies as contain nitrogen. Cultivated plants receive the same quantity of nitrogen from the atmosphere as trees, shrubs, and other wild plants; but this is not sufficient for the purposes of agriculture. Agriculture differs essentially from the cultivation of forests, inasmuch as its principal object consists in the production of nitrogen under any form capable of assimilation; whilst the object of forest culture is confined principally to the production of carbon. All the various means of culture are subservient to these two main purposes. A part only of the carbonate of ammonia, which is conveyed by rain to the soil, is received by plants, because a certain quantity of it is volatilized with the vapor of water; only that portion of it can be assimilated which sinks deeply into the soil, or which is conveyed directly to the leaves by dew, or is absorbed from the air along with the carbonic acid.

Liquid animal excrements, such as the urine with which the solid excrements are impregnated, contain the greatest part of their ammonia in the state of salts, in a form, therefore, in which it has completely lost its volatility when presented in this condition;

\* "The guano, which forms a stratum of several feet in thickness upon the surface of these islands, consists of the putrid excrements of innumerable sea-fowl that remain on them during the breeding season.

"According to Fourcroy and Vauquelin it contains a fourth part of its weight of uric acid, with ammonia and potash."

not the smallest portion of the ammonia is lost to the plants, it is all dissolved by water, and imbibed by their roots."—(pp. 140, 141, 142.)

The next passage, immediately succeeding, is a most interesting and valuable application of the action of chemical affinities to the preservation of ammonia and fixing it in the soil, for the future use of plants, by means of gypsum. But we deem the explanation thence deduced, of the *modus operandi* of gypsum as manure, as entirely unsupported by experiment, or even by plausibility.

"The evident influence of gypsum upon the growth of grasses,—the striking fertility and luxuriance of a meadow upon which it is strewed,—depends only upon its fixing in the soil the ammonia of the atmosphere, which would otherwise be volatilized, with the water which evaporates. The carbonate of ammonia contained in rain water is decomposed by gypsum, in precisely the same manner as in the manufacture of sal-ammoniac. Soluble sulphate of ammonia and carbonate of lime are formed; and this salt of ammonia possessing no volatility is consequently retained in the soil. All the gypsum gradually disappears, but its action upon the carbonate of ammonia continues as long as a trace of it exists.

"The beneficial influence of gypsum and of many other salts has been compared to that of aromatics, which increase the activity of the human stomach and intestines, and give a tone to the whole system. But plants contain no nerves; we know of no substance capable of exciting them to intoxication and madness, or of lulling them to sleep and repose. No substance can possibly cause their leaves to appropriate a greater quantity of carbon from the atmosphere, when the other constituents which the seeds, roots, and leaves require for their growth are wanting. The favorable action of small quantities of aromatics upon man, when mixed with his food, is undeniable, but aromatics are given to plants *without food* to be digested, and still they flourish with greater luxuriance.

"It is quite evident, therefore, that the common view concerning the influence of certain salts upon the growth of plants evinces only ignorance of its cause.

"The action of gypsum or chloride of calcium (bleaching salts) really consists in their giving a fixed condition to the nitrogen,—or ammonia which is brought into the soil, and which is indispensable for the nutrition of plants.

"In order to form a conception of the effect of gypsum, it may be sufficient to remark that 100 Hess. lbs. of burned gypsum fixes as much ammonia in the soil as 6250 lbs. of horse's urine would yield to it, even on the supposition that all the nitrogen of the urea and hippuric acid were absorbed by the plants without the smallest loss, in the form of carbonate of ammonia. If we admit with Boussingault, that the nitrogen in grass amounts to 1-100 of its weight, then every pound of nitrogen which we add increases the produce of the meadow 100 lbs., and this increased produce of 100 lbs. is effected by the aid of a little more than four pounds of gypsum.

"Water is absolutely necessary to effect the decomposition of the gypsum, on account of its difficult solubility, (1 part of gypsum requires 400 parts of water for solution,) and also to assist in the absorption of the sulphate of ammonia by the plants; hence it happens that the influence of gypsum is not observable on dry fields and meadows.

"The decomposition of gypsum by carbonate of ammonia does not take place instantaneously; on the contrary, it proceeds very gradually, and this explains why the action of the gypsum lasts for several years."—(pp. 142, 143, 144.)

These facts should teach the farmer the immense importance of saving, by immediately mixing and combining with gypsum, all the urine

of man and beast that is usually almost entirely wasted; and which in towns forms a nuisance in its waste, and would be a commercial commodity of great fertilizing value, and at the same time be kept free from all offensiveness, if so treated. This part of the instruction cannot be too strongly impressed on country agriculturists, and upon town guardians of health and police. But we utterly deny that the mysterious action of gypsum as manure is hereby accounted for; though this view of Liebig's has been readily received by other reviewers in this country, and set forth as entirely satisfactory. Our objections cannot be here presented at length, and will be merely announced as concisely as possible.

In the first place, in all the various attempts made by theorists and by chemists to explain the *modus operandi* of gypsum as manure, not one has been satisfactory, or has served to meet all the common and well known cases of opposite results. Davy's opinion, so far as it goes, seems the most sound, and the only one that does not lead manifestly to error. He supposes that gypsum is a necessary though always a very small ingredient of certain plants, as clover, and therefore it must be a specific manure for such plants, unless gypsum be already present in the soil; and if so present, in the very small quantity required, that more gypsum applied as manure would be superfluous, and of no effect. We take this opinion to be sound and true. But it does not explain what almost every theorizer on the subject has attempted to explain, *why* and *how* gypsum is a manure at all, and still less that it should have such wonderful effects when fully operative.

In another place, we have formerly endeavored to show, not indeed *why* or *how* gypsum acts as a manure, but why it *does not* and *cannot* act on the many soils where it is always found to be inoperative. Our view was, that the gypsum was speedily decomposed by the acid of the soil, and a new salt of lime formed, which might be, and probably was, useful as manure to some extent; but it was *no longer gypsum*—and of course could not exhibit the peculiar and wonderful productive power which gypsum alone, of all mineral manures, has shown in such very light dressings as a bushel to the acre.

Now, as complete a decomposition, and change of principles, is supposed by Liebig, in the double decomposition and re-composition of the elements of the two substances of which he treats. The separate salts, sulphate of lime (gypsum) and carbonate of ammonia, exchange principles, and become two other separate salts, carbonate of lime and sulphate of ammonia. And in the latter, the ammonia being fixed instead of volatile, (as in carbonate of ammonia,) it is to this quality of being fixed that Liebig ascribes all the benefits produced by the application of gypsum. It is *not gypsum*, according to his view, which acts, but *ammonia*; and that, not by being supplied anew, or in addition, but merely by being made more fixed and permanent in the soil.

We have no doubt but that the sulphate of ammonia, as of every salt of ammonia, must be valuable manure. But before claiming for it all the wonders produced by gypsum, it would have conformed more to inductive science, and would have

\* Essay on Calcareous Manures, 2d ed., pp. 57, 92.



been easy of trial, if Liebig had used the sulphate of ammonia, ready formed, as manure, and in as small quantity to the acre as it is furnished through gypsum. If such experiment is made, and the results like those known from gypsum are produced, then the doctrine of Liebig will have the support of facts. Without this, it is unsupported both by experiment and by reasoning. If admitting it to be fully true, then, ammonia, being a universal manure, gypsum, by fixing ammonia, would be beneficial on all soils and to all plants. But nothing is better known of gypsum than that it is almost, and generally, entirely inoperative on the greater number of soils or localities, and also for the greater number of cultivated plants.

Again—when any application of manure to land serves to increase its product as much as 100 per cent., (as is not unusual from one bushel of gypsum sown on an acre of clover,) it must be inferred that there was before in the soil either none, or a much less quantity, of the same manure. But according to the calculation of Liebig, before referred to, 116 pounds of ammonia would be the annual supply of an acre, brought from the atmosphere by rain and snow. Of this quantity only about 17 pounds could be united with the sulphuric acid of a bushel, or 85 pounds of gypsum,\* and be thereby fixed in the soil. It is beyond all question, that the benefit of the annual and gradual supply of 116 lbs. of ammonia by rain to a crop like clover, which is always ready to imbibe it through its living roots, could not be increased 100 per cent. on the effect of that *and of all other existing manures*, or causes of productiveness, by merely making more fixed 17 pounds of the 116 pounds of ammonia otherwise furnished.

Liebig accounts for the fertilizing quality of burnt clay, which has been so mysterious, to the chemical power it exerts to combine with ammonia, and also to attract it from the atmosphere and hold it for the use of growing plants. Oxides of iron have the same chemical power in regard to ammonia, and therefore the author places them in the same class as fertilizing ingredients of soil. But ferruginous soil, of itself, is not fertile, but the reverse; it is only when they are also enough calcareous that ferruginous soils seem to be the more fertile because of their iron. Thus the author's position is rendered untenable by covering too much ground. After stating that all rusts of iron and all minerals containing iron, absorb and hold ammonia, he says—

"The peculiar odor observed on moistening minerals containing alumina, is partly owing to their exhaling ammonia. Indeed, gypsum and some varieties of alumina, pipe-clay for example, emit so much ammonia, when moistened with caustic potash, that even after they have been exposed for two days, litmus paper held over them becomes blue. Soils, therefore, which contain oxides of iron, and burned clay, must absorb ammonia, an action which is favored by their porous condition; they further prevent the escape of the ammonia once absorbed, by their chemical properties."—(p. 145.)

"The ammonia absorbed by the clay or ferruginous oxides is separated by every shower of rain, and conveyed in solution to the soil.

"Powdered charcoal possesses a similar action, but surpasses all other substances in the power which it possesses of condensing ammonia within its pores, particularly when it has been previously heated to redness. Charcoal absorbs 90 times its volume of ammoniacal gas, which may be again separated by simply moistening it with water (*De Saussure*.) Decayed wood approaches very nearly to charcoal in this power; decayed oak wood absorbs 72 times its volume, after having been completely dried under the air-pump. We have here an easy and satisfactory means of explaining still further the properties of *humus*, or wood in a decaying state. It is not only a slow and constant source of carbonic acid, but it is also a means by which the necessary nitrogen is conveyed to plants."—(p. 146.)

It would seem to us, as a necessary deduction from the foregoing extract, that powdered charcoal ought to be the richest fertilizer, and therefore best manure, that could be applied to soil, and rotten wood not much inferior. Yet all farmers know that neither of these substances possess any thing like such value.

We have remarked at sufficient length on our author's views of the modes by which plants are supplied with their larger and more important and indeed essential constituent parts, carbon, hydrogen, oxygen and nitrogen. And all these are furnished to vegetation either remotely and indirectly, or immediately and directly, from the atmosphere, in gaseous form, and from sources unlimited and inexhaustible in quantity. The only other constituents of plants, and which are of inorganic origin, and not necessarily belonging to air or water, but which must be necessarily furnished by the soil, are the solid matters indestructible by burning, and left in small quantities in the ashes of plants. These, though altogether forming but a very small proportion of plants, are of sundry kinds and varying proportions of earths, alkaline salts and metallic oxides. Some of these, as salts of lime and of potash, from their being universally found in plants, must be essential to their healthy existence; and of course these substances, or their elements, are indispensable to every soil, and should be supplied as manure if exhausted by cropping, or otherwise naturally deficient. But almost every natural soil possesses these elements in the small quantity necessary for crops; and they are re-supplied to the soil in ordinary putrescent manures, containing animal admixtures. Carbonate of lime in large quantity is beneficial as manure, for other and more important purposes than to furnish the small ingredient required by growing plants. The sulphate of lime (gypsum) has been already spoken of. The phosphate of lime (the material of bones) is essential to wheat and certain other plants, and is often deficient in long cultivated and exhausted lands. Hence the great effect of bone dust as manure, even in small quantities. There can be no doubt but that the other usual inorganic constituent parts of plants, are necessary or beneficial, and should be supplied if deficient in the soil. Of this no doubt is entertained as to potash. Muriate of soda (common salt,) and oxide of iron, are also certainly beneficial, and perhaps are also essential ingredients of soil and of plants. And it may be that if one of these substances be essential to vegetation in the smallest proportion, and yet absent, that a few pounds of that substance might be an ample and most productive manure for an acre. But very

\* 100 sulphate of lime composed of 32½ lime, 46½ sulphuric acid (dry) and 21 water. 100 carbonate of ammonia, 43½ ammonia and 56½ carbonic acid.



little is yet known on this subject, and it offers a fertile field for investigation to agricultural chemists and scientific agriculturists. Liebig's remarks on these elements of plants supplied from inorganic nature, present less of what is either new or important than the other branches of his researches.

"Most plants, perhaps all of them, contain organic acids of very different composition and properties, all of which are in combination with bases, such as potash, soda, lime or magnesia."—(p. 148.)

"The acids found in the different families of plants are of various kinds; it cannot be supposed that their presence and peculiarities are the result of accident. The fumaric and oxalic acids in the liverwort, the kinovic acid in the *China nova*, the rocellic acid in the *Rocella tinctoria*, the tartaric acid in grapes, and the numerous other organic acids, must serve some end in vegetable life. But if these acids constantly exist in vegetables, and are necessary to their life, which is incontestable, it is equally certain that some alkaline base is also indispensable in order to enter into combination with the acids which are always found in the state of salts. All plants yield by incineration ashes containing carbonic acid; all therefore must contain salts of an organic acid.

"Now, as we know the capacity of saturation of organic acids to be unchanging, it follows that the quantity of the bases united with them cannot vary, and for this reason the latter substances ought to be considered with the strictest attention both by the agriculturist and physiologist.

"We have no reason to believe that a plant in a condition of free and unimpeded growth produces more of its peculiar acids than it requires for its own existence; hence, a plant, on whatever soil it grows, must contain an invariable quantity of alkaline bases. Culture alone will be able to cause a deviation.

"In order to understand this subject clearly, it will be necessary to bear in mind, that any one of the alkaline bases may be substituted for another, the action of all being the same. Our conclusion is, therefore, by no means endangered by the existence of a particular alkali in one plant, which may be absent in others of the same species. If this inference be correct, the absent alkali or earth must be supplied by one similar in its mode of action, or in other words, by an equivalent of another base."—(pp. 149, 150.)

This view is illustrated by statements of the alkaline contents of the ashes of different specimens from different soils of the same plant; in which, though the proportions of the salts of potash, lime, and magnesia, varied considerably, yet there was a remarkable equality in the total quantities of oxygen (the acidifying principle) found in the ashes of each different specimen.

"Firs and pines find a sufficient quantity of alkalis in granitic and barren sandy soils, in which oaks will not grow; and wheat thrives in soils favorable for the linden-tree, because the bases, which are necessary to bring it to complete maturity, exist there in sufficient quantity. The accuracy of these conclusions, so highly important to agriculture and to the cultivation of forests, can be proved by the most evident facts.

"All kinds of grasses, the *equisetacea*, for example, contain in the outer parts of their leaves and stalk a large quantity of silicic acid and potash, in the form of acid silicate of potash. The proportion of this salt does not vary perceptibly in the soil of corn-fields, because it is again conveyed to them as manure in the form of putrefying straw. But this is not the case in a meadow, and hence we never find a luxuriant crop of grass on sandy and calcareous soils which contain little potash, evidently because one of the constituents

indispensable to the growth of the plants is wanting. Soils formed from basalt, grauwacke, and porphyry are, *ceteris paribus*, the best for meadow land, on account of the quantity of potash which enters into their composition. The potash abstracted by the plants is restored during the annual irrigation. That contained in the soil itself is inexhaustible in comparison with the quantity removed by plants."—(pp. 158, 159.)

"The most decisive proof of the use of strong manure was obtained at Bingen (a town on the Rhine,) where the produce and development of vines were highly increased by manuring them with such substances as shavings of horn, &c., but after some years the formation of the wood and leaves decreased to the great loss of the possessor, to such a degree, that he has long had cause to regret his departure from the usual methods. By the manure employed by him, the vines had been too much hastened in their growth; in two or three years they had exhausted the potash in the formation of their fruit, leaves, and wood, so that none remained for the future crops, his manure not having contained any potash.

"There are vineyards on the Rhine, the plants of which are above a hundred years old, and all of these have been cultivated by manuring them with cow-dung, a manure containing a large proportion of potash, although very little nitrogen. All the potash, in fact, which is contained in the food consumed by a cow is again immediately discharged in its excrements.

"The experience of a proprietor of land in the vicinity of Göttingen offers a most remarkable example of the incapability of a soil to produce wheat or grasses in general, when it fails in any one of the materials necessary to their growth. In order to obtain potash, he planted his whole land with wormwood, the ashes of which are well known to contain a large proportion of the carbonate of that alkali. The consequence was, that he rendered his land quite incapable of bearing grain for many years, in consequence of having entirely deprived the soil of its potash."—(p. 161.)

"It is thought very remarkable, that those plants of the grass tribe, the seeds of which furnish food for man, follow him like the domestic animals. But saline plants seek the sea-shore, or saline springs, and the chenopodium the dunghill from similar causes. Saline plants require common salt, and the plants which grow only on dunghills, need ammonia and nitrates, and they are attracted whither these can be found, just as the dung-fly is to animal excrements. So likewise none of our corn plants can bear perfect seeds, that is, seeds yielding flour, without a large supply of phosphate of magnesia and ammonia, substances which they require for their maturity. And hence, these plants grow only in a soil where these three constituents are found combined, and no soil is richer in them, than those where men and animals dwell together; where the urine and excrements of these are found corn plants appear, because their seeds cannot attain maturity unless supplied with the constituents of those matters."—(pp. 162, 163.)

Although it is now usually admitted that all these salts, oxides, and earths left in ashes after burning plants, are drawn by the roots from the soil, still it has not been long since even scientific investigators maintained that they were produced by the growth of plants, and were to be found in their structure even when not present in the soil. Schrader, a German chemist, says Professor Daubeny, "was honored with a prize from the Berlin Academy, for having, as was thought, established this position."

How then does it happen that so many of these

inorganic substances and generally in such small quantity, but yet sufficient for vegetation, are diffused through all known soils? This is an interesting question—which though not directly considered by our author, receives important lights from his facts. He shows clearly in the following passages, that portions of the salts held in solution by sea and other water are carried off into the air by evaporation, and thus are furnished to soils at very remote distances.

"The experiments instituted under Lavoisier's guidance by the *Direction des poudres et salpêtres*, have proved that during the evaporation of the saltpetre ley, the salt volatilizes with the water, and causes a loss which could not before be explained. It is known also, that, in sea storms, leaves of plants in the direction of the wind are covered with crystals of salt, even at the distance of from 20 to 30 miles from the sea. But it does not require a storm to cause the volatilization of the salt, for the air hanging over the sea always contains enough of this substance to make a solution of nitrate of silver turbid, and every breeze must carry this away. Now, as thousands of tons of sea-water annually evaporate into the atmosphere, a corresponding quantity of the salts dissolved in it, viz. of common salt, chloride of potassium, magnesia, and the remaining constituents of the sea-water will be conveyed by wind to the land.

"This volatilization is a source of considerable loss in salt-works, especially where the proportion of salt in the water is not large. This has been completely proved at the salt-works of Naubeim, by the very intelligent director of that establishment, M. Wilhelm. He hung a plate of glass between two evaporating houses, which were about 1200 paces distant from each other, and found in the morning, after the drying of the dew, that the glass was covered with crystals of salt on one or the other side, according to the direction of the wind.

"By the continual evaporation of the sea, its salts\* are spread over the whole surface of the earth; and being subsequently carried down by the rain, furnish to the vegetation those salts necessary to its existence. This is the origin of the salts found in the ashes of plants, in those cases where the soil could not have yielded them."—(pp. 165, 166.)

Liebig does not say whether part of some only, or of all these different salts are taken up by evaporation and "spread over the whole surface of the earth;" but as no exception is stated by him, we may infer that all these salts, in minute proportions, are continually so resupplied to all soils. And here then are ample resources whence soils and plants may receive not only common salt (chloride of sodium, or muriate of soda,) and of soda, but also of potash, magnesia, and some little sulphate of lime. The lands within 20 or 30 miles of the sea coast must be much more plentifully supplied with salts, as violent tempests will carry sea water in vapor, and unchanged, many miles through the air. Hence it may well be believed that the lands of the Eastern Shore of Virginia are maintained in their productive condition by continual supplies of saline manure, furnished both by storms and continual exhalation. And as all these salts ope-

rate as manure in very small quantities, the greater or less amount of the natural and unknown supply, may well be the cause of the contradictory results of salts artificially applied. An application of a salt which would be very beneficial to a soil much in want of that particular ingredient, might be totally useless, or even hurtful, where the soil was before sufficiently supplied.

#### ON THE BEDS OF LIMESTONE AND CALCAREOUS EARTH IN THE PEE DEE COUNTRY.

From the Farmers' Gazette.

Society Hill, July 27, 1841.

Yours of the 15th was duly received. In proceeding to answer you, I must premise that I cannot give any information worth publishing in the Farmers' Gazette. It is known to many that extensive banks of shells are found on the south-west side of the Pee Dee from Port's Ferry to Burch's Ferry. These banks wherever the river washes the bluff are found from 10 to 12 feet below the surface and from 6 to 10 feet thick, and extend back in places several hundred yards. At Burch's Ferry the bank approaches the pure limestone of a gray color; at Witherspoon's old place the limestone or shell bank is harder and purer than it is at the Bluffs above; at Savage's, Giles', Ervin's G. Witherspoon's and Allison's old places the shell bank is a light yellow. It seems composed of decayed shells, sand and earthy matter. The most common of the shells not decomposed are flat pieces from 3 to 4 or 5 inches long and as broad, and  $\frac{1}{2}$  of an inch thick. Not being a conchologist I cannot give you the name of this shell. It is evidently but the remnant of some large shell fish, and as I have understood considered as extinct. The next most prevailing shell is the fluted clam of various sizes, periwinkles, &c. &c. I do not know that any of the banks above mentioned have ever been analyzed. A bank of the same appearance as the yellow bank of the Pee Dee has been found on the plantation of the late John Gibson, near Darlington Court-house, and I understood from him that he had sent a lump of the shell bank to Dr. Cooper to analyze, and upon analysis, he found it to contain, I think, about 70 per cent. of pure lime. Large beds of limestone are found at Leggett's, and at Meyers', on or near the road to Georgetown. Samples of this stone or rock were pronounced by the late Col. Blanding to be the burrstone. I understand Dr. Harllee of Marion District has leased or purchased Meyers' bed of stone, and has commenced burning lime and offers it for sale at \$1 per barrel. Large beds of this limestone are found also on Willow Creek, in the Marion District, 5 or 8 miles from Myers'. From this quarry, old Captain William Wilson, in old indigo times, burnt lime for indigo making, tanning, and brick work, &c. He had a kiln to burn the rock in, but how constructed I cannot say. Mr. R. Gordon, who now owns a part of this quarry or bed of limestone, told me he had tried the old country plan of burning oyster shells, and found it would not burn the rock sufficient to decompose it.

In the Carolina process of making indigo, lime-water was considered necessary to settle the coloring matter. My father at times I know used the yellow limestone rock, and burned it into lime.

\* According to Marcet, sea-water contains in 1000 parts,

26.660 chloride of sodium.  
4.660 sulphate of soda.  
1.232 chloride of potassium.  
5.152 chloride of magnesium.  
1.5 sulphate of lime.

My father's process was to have wood cut four feet long, and when partly dried, to place two pieces of this wood at four feet apart, and a piece in the middle, then he placed a piece across each end and side, making an open pen of four or five inches deep. This was then filled with the rock broken into fragments from four to six inches diameter, another layer of wood as above, then rock again, till he got the pile five or six feet high; fire was then placed underneath the pile, and when the wood was consumed the rock was found sufficiently burned to decompose. In the improved process of indigo making in the East Indies and South America, I understand they do not use lime. I hope the East Indians may not supplant us as effectually in raising cotton as they did in indigo.

Some twenty years ago, when I had more youth and energy than I now have, I had a boat built with a view to bring up lime from the banks below. It so happened that my crop the year I got my boat ready was a light one. The first down load was taken, and on the boat's return I ordered my people to bring up a load of limestone. Before they returned as high as the limestone banks the river was up, and my people found it difficult to get at the rock, and got only the surface or upper part of the rock, which was inferior to that which is found deeper. This load I had hauled to my plantation, burned in my father's plan as above described, and found the rock sufficiently burned to decompose. The lime I ordered to be sprinkled in the drill where I intended to plant cotton, and drilled thick enough to see it some distance, but how much to the acre I cannot say. I thought I could perceive the good effects for the first and second years; but the spot where the rock was burned was very visible for many years. Whether this effect was produced by the increased quantity of the fragments of the rock and lime, and the ashes from the wood used in burning the rock, or from the combined causes, I cannot say. Before the next season, my boat met with some accident, and thus ended my visions of enriching my plantation from lime. It is not necessary for me to say to the editor of the Farmer's Gazette, that lime, from the earliest agricultural records has been found a fertilizer or promoter of vegetation. The *modus operandi* of lime, gypsum and ashes is still I believe a debateable question. I have used all these in the same way and quantity by rubbing my cotton seed and seed corn before planting, with about equal success. In dry years the effect with me was visible in the color and increased or hastened growth of the plant. In wet years I could not perceive the effects. The result of my limited reading and experience is that lime, gypsum, ashes and salt act as solvents of the atmosphere. I prefer wood ashes to either lime, gypsum or salt. Whether a more general, safer, and cheaper use of steam will ever enable boat owners to bring up lime and deliver it cheap enough for the Pee Dee farmers to use extensively, is a question for another generation or generations to decide. All I can say is, that inexhaustible beds of limestone exist on the banks of the Pee Dee, Black River, Santee and Savannah.

A PEE DEE PLANTER.

#### EXPERIMENTS TO SHOW THE PROPER STATE OF WHEAT FOR REAPING.

[At page 35, vol. ii., of the Farmers' Register, we presented at length our views and personal experience in regard to the advantage of reaping wheat before it is fully ripe. Our opinion has been settled on this still disputed point since 1821, and our practice made conformable to the opinion. Within that time, a very general change has taken place, by somewhat advancing the time of reaping. But still, there are but few farmers who will venture to reap as soon as the time we advocated, that is, when the grain is quite soft, or in the "dough state," or but just passed the previous "milky state;" and much loss is yet sustained by what remains of the old prejudice in favor of the wheat being "dead ripe." In the following article, from the last number of the British Quarterly Journal of Agriculture, (for June, 1841,) the writer has arrived at the same deductions that we did, by a different and more accurate course of experiment and calculation; and perhaps this different mode of treating the subject may aid the conviction of those yet in doubt. In this hope, we venture to present an article, of which the length and scientific form, we fear, may be repulsive to most readers, as the general taste of readers seems to be for mere results, rejecting all the steps of reasoning or evidence by which the results were reached, and by which the truth or falsehood of the conclusions might be judged.

What the writer calls the "raw" state of wheat, agrees with what we called the "dough" state, and recommended as the best for reaping. The interval of 14 days between that and the ripe state, which he found in the cool autumn climate of Britain, would not be more than half as long, and usually still less, in our hot and dry summer.—  
ED. F. R.]

In referring to his "books," during the commutation of the tithes in this parish, a very near connexion of mine (whose agricultural experience extends over a period of more than half a century, and who, when in the active management of land, was locally noted for producing good samples of wheat) showed me a list of all the corn he had produced and sold. Observing that the prices he had obtained for wheat were nearly always above those of the neighboring markets at the same time, he informed me that he was in the habit of commencing harvest a week or ten days before the generality of farmers, it being his practice to reap his wheat before it became quite ripe.

Thinking that custom must be the best guide on this point, and that age often looks upon the past, as youth upon the future, through a glass that invests objects and thoughts with a partial hue, this explanation did not make much impression upon me, till some months after (how many I cannot exactly say,) when I observed, from a

notice in the newspapers, that a certain learned professor had proposed reaping wheat *quite green*. The result was a determination to take the first opportunity of giving both systems a fair trial. Of this trial the following are the *details* and *results* :—

Having selected a field of "*old square-headed red wheat*" for the experiments, on August 4, 1840, I cut a sheaf. At this time it was quite green, i. e., both straw and ears were in full vigor, and full of sap. Though the grain appeared perfectly formed, the chaff still adhered so firmly to it that it was scarcely possible to separate them by friction in the hands. When separated it was large and plump, but so full of milk that the slightest pressure reduced the whole to a juicy consistency or pulp.

This sheaf stood in the field for a fortnight, when it was housed. On the same day, August 18, I cut another. The wheat was of course yet "*green*," speaking positively, or "*not ripe*," if we speak negatively,—being what farmers commonly term "*raw*." That is, the straw, though appearing at a distance green, when examined closely was of a hue fast approximating to yellow; while, for about a foot upwards from the ground, it was *quite yellow*. The ears, too, were more open, the chaff tinged with various shades of yellow and green, and the grain itself, when separated, soft and pulpy, but not near so full of fluid as before. The judgment of the farmer will, however, best tell him the conditions of the wheat, both at this and at the preceding cutting, when I say, that in another fortnight the whole field was ripe. At the end of this fortnight (September 1) I housed the sheaf cut on August 18, and which had remained exposed to the weather in the interval, and cut a third. This I have said was "*ripe*;" but by the term I don't mean that degree of ripeness when the straw breaks, the ears curl, and the grain shakes out; but that condition in which it is customary to commence reaping it,—when the straw, from the roots to the ear, is uniformly yellow, and has lost all symptoms of vivid health.

On the 14th of September the third sheaf was taken from the field and carefully preserved, along with the other two, till the 1st of November, when, out of each sheaf, I selected 100 ears, and put each parcel into a separate bag. The straw from each of these parcels of ears was preserved carefully.

The ears in one bag (No. 1, or that cut very green) were now thrashed, the chaff carefully separated, and the gross weight of the corn yielded ascertained by an extremely accurate balance. The weights of a fixed measure of a certain number of grains were next found. To avoid error, this was repeated several times.

No. 2 (cut raw) and No. 3 (ripe) underwent the same process: for the results of which see the following table.

*Comparative weights of wheat reaped at different periods.*

Time of reaping and condition.	Gross produce.	Equal measure.	Equal No. of gr.
1. Aug. 4, (very green)	576	568	19 3.4
2. Aug. 18, (raw) . . .	736	580	23 1.4
3. Sept. 1, (ripe) . . .	650	570	22 3.4

As this table is merely comparative (the weights used being in parts, and decimal parts of the same, for the convenience of minute experiments,) it may not be unnecessary to give the following table of the absolute weights of each sample in ounces, drams, scruples, and grains Troy :—

	Gross produce.				Eq. measures.				Eq. No. of grains.			
	oz.	dr.	sc.	gr.	oz.	dr.	sc.	gr.	o.	d.	s.	gr.
No. 1.	4	0	0	0	3	7	1	13	0	10	5	3
No. 2.	5	0	2	13	4	0	0	13	0	10	17	1
No. 3.	4	4	0	6	3	7	2	0	0	10	15	3

The straw belonging to each sample was now weighed (all the parcels having previously been made of the same length, commencing from the bottom of the ear), when the following was the result.

*Comparative weights of 100 straws, of equal length, belonging to the samples Nos. 1, 2, and 3.*

No. 1, (green,) = 550.

No. 2, (raw,) = 475.

No. 3, (ripe,) = 450.

The next thing to be ascertained was the quality of the produce, or the comparative worth of each description. Believing in the old saying, that

"The proper value of a thing,  
Is just as much as it will bring,"

On the 5th of November I attended market, and asked the opinion of an extensive corn-grower as to the values of the respective samples, according to the prices of the day. His opinion was,

No. 1, . . . 61s. per quarter.

No. 2, . . . 64s. do.

No. 3, . . . 62s. do.

Putting the same samples into the hands of an extensive corn-factor and miller, his value, and what he would give to buy, was, for

No. 1, . . . 61s. per quarter.

No. 2, . . . 63s. do.

No. 3, . . . 61s. do.

Adding these values respectively together, and taking the mean price of each by which we shall obtain as near an approximation to the truth as possible), we have.

No. 1, = 61s. 0d. per quarter.

No. 2, = 63s. 6d. do.

No. 3, = 61s. 6d. do.

The loss or gain on these samples, by reaping at different periods, will be best seen from the following.

*Table of the relative weights and value of wheat cut August 4, August 18, and September 1; that cut last (or ripe) being taken as the standard, and unity assumed as its value in each column.*

	Weight of gross produce.	Weight of equal measure.	Weight of an equal number of grains.	Value.	Weight of the straw.
3, Sept. 1, (ripe),	1	1	1	1	1
2, Aug. (raw),	$1\frac{42}{133}$	$1\frac{1}{4}$	$1\frac{1}{7}$	$1\frac{1}{133}$	$1\frac{1}{8}$
1, Aug. (green),	$\frac{288}{313}$	$\frac{234}{313}$	$\frac{70}{81}$	$\frac{1}{133}$	$1\frac{1}{8}$

According to this table, it is evident that the wheat reaped a fortnight before it was ripe has the advantage of the ripe in every point :

1st, In weight of gross produce  $\frac{43}{325}$ , or  $13\frac{1}{2}$  per cent.

2d, In weight of equal measures  $\frac{1}{7}$ , or nearly  $\frac{1}{2}$  per cent.

3d, In weight of equal number of grains  $\frac{3}{7}$ , or nearly  $2\frac{1}{2}$  per cent.

4th, In quality and value  $\frac{4}{13}$ , or above  $3\frac{1}{2}$  per cent.

5th, In weight of straw  $\frac{1}{8}$ , or above 5 per cent.

On the other had, that reaped a month before it was ripe, has an advantage of 22 per cent. in weight of straw, compared with the ripe, but in every other point has the disadvantage: thus,

1st, In weight of gross produce  $\frac{37}{325}$ , or  $11\frac{5}{13}$  per cent.

2d, In weight of equal measures  $\frac{1}{33}$ , or rather more than  $\frac{1}{2}$  per cent.

3d, In weight of equal number of grains  $\frac{1}{7}$ , or better than  $13\frac{1}{2}$  per cent.

4th, In quality and value  $\frac{1}{33}$ , rather more than  $\frac{1}{2}$  per cent.

It may be here necessary to mention that the sample No. 3 (ripe) was very bold, but *rather coarse*, feeling rough in the hand; while No. 2 (raw) was quite as bold, but *very fine and thin in the skin*. No. 3 (green) was also a good and clear sample, but *much smaller than either of the other*. This will account for the apparently anomalous fact of there being scarcely any difference in the marketable value of the green compared with the ripe, while there is a difference of 13 per cent. in favor of the ripe in weight of equal numbers of grains; for the sample being dry and good, the buyer lost little by this inferiority in the size of grain as the weights of equal measures were the same,—the difference of  $\frac{1}{33}$  scarcely making  $\frac{1}{2}$  lb. in the sack.

Before venturing to draw my deductions from these experiments, let us put their results in a still more practical point of view.

Suppose we have three acres of wheat, one of which, reaped when ripe, yields us 30 bushels of corn and one ton of straw; what will be the gross value of the same? And what the value of the other two acres, according to the data furnished by the foregoing experiments, supposing each acre to be exactly equal in crop, and the one reaped a fortnight and the other a month before the ripe?

Before answering this, we must fix a value for the straw—say 2d. per stone, which, taking into account that used by the farmer himself—and many cannot sell any—is as much as it is actually worth. Whence we have, for the acre of ripe.

30 bushels of wheat, at 6s. 6d. per quarter (the price of sample No. 3.)	£11 10 7½
1 ton of straw, at 2d. per stone,	1 6 8

Gross produce, £12 17 3½

Let us next take the acre cut "raw." Before we can come to its value, we must first resolve the question, How much, in measure, will the acre produce us, supposing it to produce 30 bushels, if cut when ripe?

In solving this, as we must assume each crop to be exactly equal if cut at the same time, it is obvious that if we would determine the difference caused by reaping at an earlier period, we cannot find our calculations upon the gross weight of

the two samples (Nos. 2 and 3); for, although there is no doubt but that this weight was materially affected by the condition of the wheat at the time of reaping (indeed the difference in the weight of equal numbers of grains proves the fact), it is possible that, in selecting the 100 ears from the sheaf, I might take out of one sheaf ears with a greater number of grains in them than those taken out of the other. This, then, would affect the total or gross weight; and, therefore, it cannot be taken into account in the present case, where both acres are supposed to have an equal number of grains.

To the weight of equal measures, and of equal numbers of grains, both the result of many careful trials, this objection cannot be urged; and they are amply sufficient to enable us to tell the produce of an acre of "raw," when that of the "ripe" is 30 bushels. Thus, in the first table, we have.

	Wgt. of eq. measures.	Wgt. of eq. Nos. of grs.
No. 2 (raw,)	580	23.25
No. 3 (ripe,)	570	22.75

Now put  $m$  = this measure, and  $n$  = the number of grains weighed of each sort; then

$n : 22.75 :: 1 : \frac{n}{22.75}$  = the weight of one grain of No. 3, whence

$\frac{22.75}{n} : 1 :: 570 : \frac{570n}{22.75}$  = the number of grains of No. 3 in the measure  $m$ .

Again, similarly,  $n : 23.25 :: 1 : \frac{n}{23.25}$ ,

weight of one grain of No. 2, and  $\frac{23.25}{n} : 1 :: 580 : \frac{580n}{23.25}$  = the number of grains of No. 2 in the measure  $m$ .

And  $m \div \frac{570n}{22.75} = \frac{570n}{22.75} \div m$  = the space occupied by one grain of No. 3 (ripe); and

$m \div \frac{580n}{23.25} = \frac{580n}{23.25} \div m$  = the space occupied by one grain of No. 2 (raw.)

Now, as there are the same number of grains upon each acre, and as the acre of ripe yields 30 bushels, we have

$\frac{22.75m}{570n} : \frac{23.25m}{580n} :: 30 \text{ bushels} : 30.1307313$

bushels, the produce of one acre cut a fortnight before the ripe.

Again, by reference to page 27 in the second table, we have 1 and  $1\frac{1}{4}$  as the relative weights of the straw No. 3 and No. 2; whence, as No. 3 is supposed to produce one ton,

$1 : 1\frac{1}{4} :: 160 \text{ stones} : 168\frac{1}{2} \text{ stones}$ , the weight upon the acre reaped when raw. And for the whole produce of the acre, we have

30.1307 bushels of wheat, at 6s. 6d. per quarter,	£11 19 1½
168 stones of straw, at 2d. per stone,	1 8 1½

£13 7 3½

Adopting the same course for the produce of the

acre cut first, i. e. a month before the ripe, and which corresponds with sample No. 1, we get

568 n

$\frac{\text{---}}{19.75}$  = the number of grains of the green in the measure m;

19.75 m

whence  $\frac{\text{---}}{568 n}$  = the space occupied by one grain of green.

But (*vide* above,)  $\frac{22.75 m}{570 n}$  = space by one grain

of the ripe;

22.75 m 19.75

whence  $\frac{\text{---}}{570 n} : \frac{\text{---}}{568 n} :: 30 \text{ bushels} : 26.1356$

bushels, the produce of the acre cut a month before the ripe. And (*vide* "Table of relative weights," &c., page 27.)

1 :  $1\frac{1}{2}$  :: 160 stones :  $195\frac{1}{2}$  stones of straw, the produce of the same; whence we have

26.1356 bushels of wheat, at

61s. per quarter, - - - - - £9 19 3 $\frac{1}{4}$

$195\frac{1}{2}$  stones of straw, at 2s.

per stone, - - - - - 1 12 7

£11 11 10 $\frac{1}{4}$

The total products of the three acres stand thus:

No. 3, Reaped when ripe, . . . £12 17 3 $\frac{1}{4}$

No. 2, do. a fortnight earlier, . . . 13 7 3 $\frac{1}{4}$

No. 1, do. a month before the ripe, 11 11 10 $\frac{1}{4}$

Showing a loss of £1 : 5 : 5, or about 10 per cent., by cutting very green; and a gain of 10s. per acre, or nearly 4 per cent., by reaping in a raw state, or a fortnight before it was ripe.

From the above details, it would appear that it is the farmer's interest to cut his wheat before it becomes thoroughly ripe. Many, no doubt, will be disposed to doubt deductions of such importance drawn from such limited experiments. This objection the writer anticipates, because it is a natural one, which he felt himself, when he considered the most important conclusions which resulted; when, however, he retraced, *step by step, his investigations, without any variation in that result*, he could no longer refuse to believe it true till he proved it untrue. He is aware that there are other points of consideration in this subject—that there are peculiarities in the nature of land, of seed or of season, and that there is, as in all man's investigations, a possibility of error; any of which circumstances might materially affect the result of experiments upon so limited a scale as the present one; and for this reason he will, if all be well, give the subject a trial in the ensuing harvest, on a much more comprehensive scale. That the results of these experiments will be corroborative in the main points, he has no doubt, and for this cause he feels no hesitation in laying the preceding "details" before the agricultural world; moreover, as he has in no case given a deduction without the grounds upon which it rested, the degree of "acceptation" which the reader may give it rests with himself. The most sceptical, he however flatters himself, will think it "worthy" of being tested, if of nothing more.

In testing, however, the conclusion which the foregoing experiments warrant, there are some other advantages which strengthen that conclu-

sion, which must not be forgotten. That they have not been considered in the preceding pages, is not because they are of no import, but, on the contrary, because they are of such consequence that the writer could not assign them an *adequate momentary value*. And had he attempted to do so, he would have at once made the details of his experiments valueless, by mixing the real results of *practice* with the imaginary ones of opinion. Before the subject, however, can be thoroughly sifted, they must be considered. The circumstances are these:—independently of the 4 per cent. gain (according to the foregoing experiments) by reaping our wheat a fortnight before it is ripe, we have

1st, Straw of a better quality.

2d, A better chance of securing the crop; and,

3d, A saving in securing it.

1st, "Straw of a better quality." This is easily demonstrated both for the purpose of food and manure.

As an article of food the value of any vegetable depends upon the gross quantity, or upon the combination of certain substances termed soluble, from their entering into union with water. This rule applies particularly to the grasses which are used for the purpose of feeding stock.\* The substances generally found in these grasses are saccharine matter or sugar, mucilage or starch, and gluten or albumen, and bitter extract and saline matters. Of these the sugar is no doubt the most, and the extractive matter the least, nutritive; the latter having been found, by experiment, to come away in the dung of the animal consuming it, while the other matters were absorbed by the body.

Now wheat is a species of grass, and the value of the straw, as an article of food, depends upon the quantity of nutritive matter contained in it. "This nutritive matter must be very small in straw, as now generally used," the practical farmer will say, "for straw *per se* is but poor food, and scarcely able to sustain life." This is true; from 400 grains of dry barley straw," says Sir H. Davy, "I obtained 8 grains of matter soluble in water, which had a brown color, and tasted like mucilage. From 400 grains of wheat straw, I obtained 5 grains of a similar substance." With this paucity of nutritive matter in the straw before us, how can we account for the fact that, in the sap of wheat, the straw, and in all succulent plants, there is *naturally a great proportion of mucilaginous and saccharine matter*?† The answer is this. In all grasses and succulent plants, the greatest proportion of this is present before the flower is dead ripe.‡ So in wheat, when we allow the straw to remain till thoroughly ripe, a portion of the sugar is converted by the action of

\* "The mode of determining the nutritive power of grasses by the quantity of matter they contain soluble in water, is sufficiently accurate for all the purposes of agricultural investigation." Sir Humphry Davy in his "Account of the Results of Experiments on the produce and nutritive qualities of different grasses and other plants, instituted by John, Duke of Bedford."

† "The fluids contained in the sap-vessels of wheat and barley afforded, in some experiments which I made on them, mucilage, sugar, and a matter which coagulated by heat." Sir H. Davy, *Agricul. Chem.* 142.

‡ *Vide* *Agricul. Chem.* Sec. 6, p. 264.

light, heat, &c. into mucilage,\* and a great proportion of the nutritive powers of the grass absorbed by the atmosphere, or lost in some manner; for, as Mr Sinclair observes, in his "*Report of Experiments on Grasses*," "there is a great difference between straws or leaves that have been dried after they were cut in a succulent state, and those which are dried (if I may so express it) by nature while growing. The former retain all their nutritive powers, but the latter, if completely dry, very little, if any."

As a manure, too, the straw cut "raw" is equally superior to the ripe; for, as it is an agricultural axiom that the better the food of an animal is, the better the manure from it, the manure from a stock consuming this straw, containing a fair proportion of nutritive matter, must be more valuable than that from stock consuming the ripe with scarcely any in it.

• But a great proportion of the farmer's straw is converted into manure without undergoing the process of mastication and digestion. For this purpose the unripe straw is equally preferable, as all unripe vegetables are manures without preparation†—the soluble and nutritive extracts which they contain, being the principal agents in forming vegetable manure; as they not only combine to render the process of decomposition the more rapid, by breaking down the woody fibres,‡ &c. in the manure heap, but are also in their pure and separate states stimulants to vegetation.§

\* The inferiority of the quantity of sugar in the summer crops, probably depends upon the agency of light, which tends always in plants to convert saccharine matter into mucilage. Ibid. p. 414.

† "Green crops, or any kind of fresh vegetable matter, require no preparation to fit them for manure."

"All green succulent plants contain saccharine or mucilaginous matter, with woody fibre, and readily ferment. They cannot, therefore, if intended for manure, be used too soon after their death."

"When green crops are to be employed for enriching a soil, they should be ploughed in, if it be possible, when in flower; for it is at this period that they contain the largest quantity of soluble matter, and that their leaves are most active in forming nutritive matter." Sir H. Davy, *Agricult. Chem.* p. 264.

‡ "Vegetable manures, in general, contain a great excess of fibrous and insoluble matters, which must undergo chemical changes before they can become the food of plants. It will be proper to take a scientific view of the nature of these changes, &c."

"If any fresh vegetable matter, which contains sugar, mucilage, starch, or other of the vegetable compounds soluble in water, be moistened and exposed to air, at a temperature from 55° to 80°, oxygen will soon be absorbed, and carbonic acid formed; heat will be produced, and elastic fluids, principally carbonic acids, gaseous oxide of carbon, and hydrocarbonate, will be evolved; a dark-colored fluid, of a slightly sour or bitter taste, will likewise be formed; and if the process be suffered to continue for a time sufficiently long, nothing solid will remain, except earthy and saline matter, colored black by charcoal."

"In proportion as there is more gluten, albumen, or matters soluble in water, in the vegetable substances exposed to fermentation, so in proportion, all other circumstances being equal, will the process be more rapid." Ibid. p. 257.

§ "Mucilaginous, gelatinous, saccharine, oily, and extractive fluids, and solution of carbonic acid and water, are substances that, in their unchanged states, contain almost all the principles necessary for the life of plants." Ibid. p. 256.

It may be urged that the increased value of the straw is more in favor of that cut very green (No. 1) than that cut a fortnight later (No. 2.) This is true; but, to produce this increase of value, if we cut our wheat so early as No. 1. we have a desiccation of the grain to such an extent as to diminish the measured produce above 12 per cent.; while, by reaping with No. 2, we are, so far from injuring either sample or measure, actually improving both, and at the same time gaining above 5 per cent. in the weight, and at least as much in the quality of the straw. For the increase of weight in the latter is not produced by a greater produce, but by the presence of a greater portion of those soluble substances which are alike necessary to animal and vegetable life—are alike the nutritive part of food and the quickening principle of manure.

2d, We come now to the second advantage, the "better chance of securing the crop."

This is self-evident. We gain a fortnight at the commencement of harvest. If the weather be good, we can secure a great portion of our wheat before we should scarcely have begun upon the old system. If not, we can wait; so, under any circumstances, our chances of securing the grain must be greater. Moreover, if we take a retrospect of the harvests for a number of years, we shall find that nearly all the early harvests have been what we term "good" ones, i. e. good as regards weather and the condition in which the grain was secured. When the peculiarities of our climate, its general fickleness, and its still greater liability to change as the autumn advances, are considered, this will require no explanation.

If we look, too, at the later harvests, we shall, I venture to say, find that, in nine cases out of ten, the grain which was cut first was secured in the best condition. As an example of this, the crop of 1839 will suffice. The crops were late, the beginning of reaping the same, and the result was that in the north of England full 75 per cent. of the whole wheat crop was damaged. And full 75 per cent. of that which was uninjured, I will also venture to say, was that which was cut the first. In Yorkshire this was especially seen; for the earliest wheat was with the greatest difficulty secured. In this village (North Deighton) not a sheaf was in stack till the day before, and on some farms, the very day on which the rainy weather set in.

The frequent recurrence of such years as this, will teach the value of even a fortnight better than any thing that can be said here. And that they will recur is beyond a doubt. What has happened once may happen again, but what has frequently happened, (as this sort of harvest has,) with the same causes in operation, we are warranted in saying, will happen again and often.

3d, The saving in securing the crop is a double one. In the first place, there is less waste in moving or reaping, and no danger of "shaking" or "necking" in strong winds. In the second place, there is an absolute economy in the expense of reaping the crop, which may be thus illustrated.

The busy period of harvest with the farmer generally extends over four or five weeks. In this month a certain portion of his work is done by his own hands, i. e. by the regular laborers and

servants of the farm; therefore, by beginning a fortnight sooner, and extending the season of harvest over six weeks instead of four, it is evident that these regular servants would cut a much greater proportion of his crop—in fact *one-half more*. By this he is rendered less dependent on those extraneous "*helps*" or "*takers*," who, in the seasons of hurry and anxiety, fix their own terms.

How often do we, especially in the north, behold a force of reapers in almost every field. The reason is this: the wheat, oats, and barley, are often ripe at one time, and aware as the farmer is of the injury which strong winds and showers would do them, he has to hunt up laborers at any price. And, after all this extra expense, it is extremely probably that, having the whole of his harvest upon his hands at once, he is compelled to let some part of his grain have *too little* or *some too much* weather. By commencing his wheat harvest a fortnight earlier, these evils would have been prevented; by the time that his barley and oats were ready, most or all of his wheat would have been cut, and some of it fit for the stack, and that, too, by the exertions of his regular workmen only. And being neither pressed for time nor laborers, his harvest would have been finished at a less expense, and his grain secured very probably in a much better condition.

To assign a value for these advantages is, as has been said before, for the farmer himself; and it will not be an insignificant one. For it beginning harvest a fortnight earlier enables him to save a crop from spoiling once in a lifetime,—it the improved quality of his straw as food for his stock allows him to plough out an acre more, or to pasture another acre of clover with feeding stock, instead of mowing it for his lean stock, every grain saved, every extra bushel of corn produced, and every extra head of stock fed, is a benefit to the whole community as well as to himself—is so much added to the gross produce and wealth of the country. There being, in fact, an *increased return without an increased outlay*.

#### BONE-DUST.

From Jackson's Treatise on Agriculture.

Bones, which have now become a very important manure, are composed of earthy salts, chiefly phosphate of lime, with a little carbonate of lime, phosphate of magnesia, and about one-half of decomposable animal matter. Those of fat young animals are allowed to be the best.\* They are less beneficial for clay lands than light soils, and less efficacious in wet than in dry seasons. In the improved districts of Scotland, bone-dust is coming into very general use as a manure for turnips, and mills for crushing bones are general in many parts of the country. There has been no improvement in Scottish agriculture so universally adopted as that of applying bone-dust to land in-

\* The following table gives the ordinary proportions of the ingredients composing bone-dust:—

Earthy and saline matter	40	} parts in 100.
Cartilage and jelly	40	
Fatty matter	20	

tended for the production of turnips, and it seems better qualified than any manure hitherto tried for bringing waste land into cultivation. It is light, and can be carted to a great distance at little expense, one wagon load of 100 bushels being found nearly equal to 40 cart-loads of farm-yard manure. It is asserted by some, that its efficacy remains during the whole rotation, and even after it. On pastoral farms it will be found exceedingly useful; as, raising a better crop of turnips, it will greatly improve the condition of the stock.

In corroboration of the above remarks, we quote the following:—"A farmer obtained a forty years' lease of a tract of poor land in a high situation near Rochdale in Lancashire, on which, after fencing and draining, he erected a bone-mill, and began manuring the land at the rate of from 100 to 130 bushels per acre. The consequence of this was, that he let off, in a few years, more land than paid the rent of the whole, and retained a large farm in his own hand."\*

In the wolds of York and Lincoln shires, it is stated that "before bones were extensively used in turnip husbandry, many thousands of acres were annually sown for that crop without any manure whatever. The turnips upon such unmanured land were consequently very indifferent, and the benefit of feeding sheep on their tops was very trifling. But since the use of bones has become general, the turnip crop has increased tenfold. All the succeeding grain crops have been much larger, and upon the four or five shift system, there is no doubt the land will go on progressively improving, requiring a less quantity of bones annually, from its increased fertility and power."†

From experiments made regarding the efficacy of bone-dust contrasted with farm-yard dung, on soils of a light sandy nature, the result has been uniformly in favor of the first, one and a half tons of bones being equal to twenty tons of dung. To ascertain the effects of large and small quantities, from 20 to 100 bushels per acre, in various amounts, have been applied, and it has been found that the crops are not increased when laid on beyond a certain quantity. By being applied in large quantities, although not immediately beneficial, bone-dust has been found to render land extraordinarily productive for a great length of time. We quote the following rules for its application:—

1. On dry lands, limestone, chalk, light loams, and peat, bones are a highly valuable manure.
2. That they may be applied to grass with great good effect.
3. That on arable lands, they may be laid on fallow for turnips, or used for any other subsequent crops.
4. That the best method of using them when broad-cast, is previously to mix them up in compost with earth, and let them lie and ferment.
5. That, if used alone, they may be either drilled with the seed or sown broadcast.
6. That bones which have undergone the process of fermentation, are decidedly superior in their immediate effects to those which have not been fermented.
7. That the quantity should be about twenty bushels of dust, or forty of large bones, increasing the quantity if the land be impoverished.
8. That upon clays and heavy loams,

\* Journal of Agriculture.

† British Husbandry.



it does not yet appear that bones will answer. On this latter observation, however, a farmer near Nantwich in Cheshire remarks, that he 'occupies a farm in the township of Pickmore, the soil of which is a clay loam scarcely twelve inches deep, the subsoil a gray sand mixed with coarse clay, on a bed of good clay marl. Two years ago he covered a field with bone manure, previous to which the grass was so sour as not to be worth ten shillings an acre; but it is now full of most excellent herbage, consisting of white clover, and trefoil.' To this he adds, 'that on another of this fields with a clay soil, a small portion of it was manured thirty-two years ago by a former tenant with bones, and that although it has been twenty years in tillage, yet that part still shows a superiority over the rest.' At Clumber Park, the seat of the Duke of Newcastle, 600 bushels of small bones were in 1822 spread upon 24 acres of grass land in the dairy farm, consisting of dry, sandy, and gravelly soil, which had been laid down about ten years. Their effect upon the pasture improved the condition of the cows so materially, that about twice the quantity of butter was made from them than from cows grazed on land of a similar quality, but not boned; and this effect, it is said, still continues. The time for laying them upon the land as a top-dressing to grass, whether seedling or pasture, is generally recommended to be early in spring. Seeing that the fertilizing quality of bones is improved by fermentation, it has led to the supposition that they may be usefully applied in compost with earth and other substances; by this mixture it has been found from experiment that they soon become decayed and pulverized. It is stated in the Doncaster Report, 'that this method of using bones in the formation of composts is recommended by several intelligent farmers, thirteen of whom, solely from their own experience, described its effects as superior to those of bones used singly. With some of these, it is the practice to mix fifty bushels of bones with five loads of burnt clay or good earth per acre, by which dressing, the crops between fallow and fallow, except clover, appear to be increased one-fifth in value.'\*

#### RED CLOVER, ETC., IN FRANCE.

[Translated from *Le Bon Jardinier*, for the Farmers' Register.]

*Trifolium pratense*, red clover. The plant mostly in cultivation on the natural meadows of France is the trefoil, owing, without doubt, to the facility with which it is brought into the rotation of three years, without deranging the order, a practice still generally followed, and under which system, it is said, this plant has rendered and still renders more service than any other, in contributing to the suppression of the effects of the fallow year, and in showing that the land can be entirely renovated by a productive year for clover. But it is to be regretted that this mode of using the clover is not replaced by another less defective; for the lands where they remain, with only a single year's rest for a long time, must wear out. Clover delights in soils new and deep; it succeeds on clay lands suitably manured, and pretty well on

those of a sandy nature, if the land does not fire it. It is most generally sown in the spring, on the oats and barley, and frequently on the green wheat; sometimes in the autumn; but that season suits only where the land is in fine heart, and where the frosts will not disturb it. When it is sown on crops already up, and it is wished not to harrow it, a time should be chosen when there is a prospect for rain. Great care should be taken to cover the grain very lightly, on account of its extreme fineness. The pasturage of clover charged with dew and moisture is very dangerous, as well as that also which is cut and fed green. It should only be given to the cattle when sufficiently cured. Plaster is excellent manure for this plant. The quantity of seed to an acre is about 16 pounds; but the practice in different places is very various on this point. In one place they put only three or four pounds, in another twenty, and sometimes more. Gilbert has taken the average of a great many cantons which he has found to be fifteen and a half pounds to the acre.

*Trifolium repens*, white clover. The species is hardy, and very well adapted to the pasturage of sheep. It is sown in some parts of Germany to mow; but its produce in this manner is very inconsiderable. White clover grows well on light and dry lands, and can be employed very usefully there. It will grow also on moist lands. I have seen it very fine on meadows so moist that the *fétuque stohante*, [cat-tails, I believe] grew there in abundance. It requires about twelve pounds of seed to the acre.

*Melilot de Sibérie*, *Melilotus alba*.\* Many plants of this species have often been tried for forage, without any being yet established in culture. Even the Siberian melilot, so beautiful, so vigorous, and so luxuriant, notwithstanding the commendations of Daubenton, and of our celebrated Andre Thouin, has not come into general use. Its stalks, too succulent when young, and too hard when more advanced, render its conversion into forage difficult and not advantageous. Its use as pasture would be best, but the want of precaution and vigilance causes the melilot to be more dangerous than trefoil or lucerne. Cattle permitted to graze upon it after a rain, or before the rays of the sun have dispelled the humidity of the dews, swell, and often perish. Melilot is biennial, and can be introduced into the rotation of crops as trefoil; it grows more readily than that on indifferent and dry lands. One reason why it should be cultivated is, that it affords bees, from its numerous flowers, an abundant pasture, which they seek with avidity. Sow from twelve to fifteen pounds to the acre.

#### TO THE FRIENDS OF A NATIONAL AMERICAN SOCIETY OF AGRICULTURE THROUGHOUT THE UNITED STATES.

From the National Intelligencer.

*Fellow-Citizens*:—The object of the present address is to ascertain whether there is, at this time, a sufficient number of the friends of this great measure in our Union willing to lend their

\* Is this the plant of which two of your correspondents lately wrote?—*Tr.*

We presume it is, or one of the varieties.—Ed. F. R.

\* British Husbandry.

influence to warrant the call of a primary meeting to organize such an institution. Should the indications appear favorable, a committee of the friends of the cause will take upon themselves the responsibility of naming a time and place for the meeting.

We earnestly hope that some of you will promptly lend your own names, and procure a few others in your vicinity of such persons as desire to promote American Husbandry: and that you will transmit them by mail in time to reach Washington by the 10th of August, addressed to H. L. Ellsworth, esq., Commissioner of Patents, for Solon Robinson.

We remain, fellow citizens, your agricultural friends and humble servants,

SOLON ROBINSON, of Indiana.

JAMES M. GARNETT, of Virginia.

July 24th, 1841.

#### DISPUTED QUESTIONS IN AGRICULTURE.

To the Editor of the Farmers' Register.

August 2d, 1841.

Dear sir:—It may perhaps be deemed a very useless, if not presumptuous, attempt in any individual to suggest any means of settling for ever even a small portion of those apparently interminable controversies in regard to certain agricultural matters with which our agricultural papers have been and still are often filled. But the very circumstance of their being continued is, I think, a conclusive proof that each disputant believes that they *may* be brought to a conclusion, provided a proper course was pursued for the purpose. In the hope therefore of recommending such a course, I will proceed to notice a few of these controversies, together with the manner in which the questions that gave rise to them have been treated. This has been such, in most instances, as to serve scarcely any other purpose than to crowd our books of husbandry with communications, the authors of which appear far more anxious to put each other in the *wrong*, than to set the agricultural public *right*, in regard to the subjects of controversy. The effect of most of these articles has been to aggravate the unreasonable prejudices against agricultural works; to perplex greatly all young farmers who read for information; and immeasurably to weary old ones, in witnessing such a waste of words—uttered, professedly, to give light, but, in reality, often making confusion worse confounded. Instead of giving us accurate details of experiments, most carefully made, together with their results, which alone can satisfactorily settle such matters, we find, in much of what they write, little else than speculative opinions and theoretical arguments, or ill-digested and unsound conclusions from some things which they call experiments, but which are really deficient in all the particulars that it is essential to notice most accurately, before they can be entitled to any weight.

This, I think, may truly be affirmed of nearly all that I have read of what has been written on the following controverted subjects:

Whether vegeto-animal manures should be turned under in their freshest state, or left on the surface of the land, until it is cultivated?

Which is the most productive variety of Indian corn in each section of country, where the climate, soil, and situation is nearly the same?

At what distances is it best to plant, and by what modes of culture corn will produce most net profit?

Whether it is injurious or beneficial to cut the roots of corn, during its growth?

And last, though not least, what is the true opinion in regard to that great "*pons asinorum*" in agriculture, the *convertibility of wheat into cheat or chess*?

Now, in my humble opinion, all these still undetermined questions might have been settled many—many years ago, if those who were most interested in them had taken the trouble to make a few such perfectly accurate experiments as any cultivator of his own or others' land might very easily make; and to publish the results of the same, in our agricultural journals, instead of the numerous vague speculations and inconclusive statements on the foregoing subjects, with which these journals have so often been filled. Whether I am right or wrong in this opinion, let your readers determine, after considering the following queries to which I respectfully invite their attention.

How easy would it have been, in order to settle the first controversy, for all who felt sufficient interest in it to desire that it should be settled, to spread vegeto-animal manure equally, over a small determinate quantity of land, and then, alternately to plough it under, and leave it on the surface of exactly equal portions of this land, and to compare, by accurate measurement, the produce of each portion?

Would it not have been equally easy to settle the second controversy, by planting a like determinate quantity of land with as many varieties of Indian corn as the experimentalist wished to compare together, giving to each exactly equal portions of the land, the same distances between the hills and rows, the same number of stalks in a hill, and precisely the same culture; and then accurately to measure the produce of each portion? To prevent this produce from being much affected by intermixture, an oblong form might be given to the land on which the experiment was made, and the rows planted across, to the number, say, of 12 or 15. Then, by comparing an equal number of the middle rows only, the experiment would approach sufficiently near absolute accuracy to satisfy even the most sceptical.

To ascertain the best distances at which to plant corn in the richest, the poorest, and the medium quality of land, what difficulty would there be in trying all such as are most approved by practical men, on an ascertained quantity of land of either of the foregoing qualities, giving to each distance exactly the same sized portion, and then measuring accurately the produce of each portion, as in the other experiments?

With a view to ascertain the best modes of culture, can it possibly be satisfactorily done without comparing them at the same time, on exactly equal portions of land which is the same in soil, fertility, and situation; and can there be any great difficulty, expense or trouble in making this comparison. Yet who, among our numerous writers on the subject, has ever reported any such

experiment? This, if it ever had been properly made, would have settled for ever, whether it benefits or injures corn to cut the roots, since *cut they will be*, more or less, by every mode of culture which has ever yet been tried. If the portion of land on which fewest roots had been cut produced the most corn, and that portion yielded the least where the root-cutting had been greatest, then surely the first mode of culture would be preferred by every body, but the obstinate fools who have no better reason for any thing they do, than that they have always done the same.

With respect to the cheat or chess controversy, I am almost afraid to open my lips, for most of our brethren who maintain that cheat is the produce of wheat, seem to have worked themselves up into such a choleric and bellicose humor on the subject, against us who maintain the negative in this matter, that it is quite a perilous thing to offer any argument in support of our opinions. I will therefore content myself with only asking a few simple questions. Is it among the unknowable things of this world to ascertain the truth in regard to this controversy? If it is, why should another word be ever said, or written about it? If it is *not*, can any one oblige me so far as to name a single experiment, among all which have been so called and stated as proofs that wheat will turn to cheat, which is not most palpably defective in several essential particulars? I can truly say that I have never seen even a solitary one, but that which was made in 1833 by Messrs. Thomas and William J. Cocke and yourself. This is to be found in the first volume of your Register, on the 83d and 84th pages; and to my mind is most conclusive proof, that for *wheat to produce cheat*, is quite as great an impossibility as for "thorns to yield grapes," or for thistles to produce figs. I will farther ask, if any experiment made with *less* particularity and accuracy than the one just referred to, ought to be regarded, even in the slightest degree, as contributing towards settling this much and long agitated controversy, or indeed, should be entitled to a place in any of our agricultural papers? None, I think, who really desire to come at the truth in this matter could reasonably object to the editors of these papers requiring equal or even greater accuracy and minuteness in the experiments which they may be required to report for either of the parties concerned. If the zeal of those who maintain the affirmative in this controversy, be not sufficient when stimulated by the hope of victory, to impel them to take the trouble of making such experiments as have just been suggested, I would beg leave hereby to call their attention to your pledge—made a few months ago, to pay one hundred dollars—not "in rags," but in good lawful money, to any one who can prove by similar experiments, well authenticated in all their particulars, that he has succeeded in converting *wheat into cheat*.

I could mention several other subjects upon which much difference of opinion has been expressed, for many years past, and which still occasionally appear in our agricultural papers. Serving no other purpose than to show the great disproportion in number between the multitude who prefer writing out and publishing their conjectures on these topics, and the few who choose

the *less* easy, but more troublesome road of accurate experiments to solve their doubts. But until this be generally done in regard to all matters which *can* be settled by the experimental process, the readers of our agricultural journals (good as I admit most of them to be) will have to pay for much that affords them little, if any satisfactory information. If "*action, action, action*," be essential to form the finished orator, I would say that—*experiments, experiments, accurate experiments* are equally, nay, more important, to form the complete farmer. I remain, dear sir, yours very sincerely,

JAMES M. GARNETT.

#### THE CANKER-WORM.

From the Albany Cultivator.

Newport, Feb. 23, 1793.

Hon. Justin Ely, esq.—I was the last evening favored with yours of the 14th inst. "It is with real pleasure I communicate to you, sir, the information I have had of the efficacy of quicksilver in destroying the canker-worm, so destructive to our apple trees. Having been informed of an instance in which the trial had a complete effect, I was induced to examine into the facts personally. I waited upon the gentleman who had declared the success of his experiment:—A Mr. McCurrie, a gentleman who owns and improves a good farm on this island,—a man of good observation, an excellent farmer, and on whose credit the utmost reliance may be had. He had several orchards, but the one the experiment was made in was an old orchard of very large trees. Nine trees, the most central in the orchard, he bored with a spike gimlet about four or five feet from the ground, an inch and a half or two inches into the tree, rather slanting the boring downwards. He procured an ounce of quicksilver from an apothecary—half an ounce he inserted into one of the trees, a quarter of an ounce he inserted into three trees in equal quantities, and the other quarter of an ounce as equally as he could, he divided into five other trees. He then plugged up the holes tight. This was done, I think, in December. Some weeks after, he took out the plugs, and found the quicksilver in the same state he had put it in. He again plugged up the holes, and some time after the sap of the trees had begun to ascend, he again took out the plugs and found the quicksilver was gone, leaving behind something like the slime of a snail. The worms came as they had done the year before, and totally destroyed all the verdure, &c., of all the trees except those nine, which were in as good order as ever they had been, and yielded their common plenty of apples, about one hundred bushels. The boughs of some of the nine trees interlayed, and were interwoven with the branches of the other trees; and he said the fruit upon them was equally good, while the branches of the other trees so interwoven amongst them, appeared as though they had been fired. The trees with the least quantity of quicksilver were equally protected or preserved, as the one which had half an ounce. He inserted the quicksilver with a quill open at one end and the side of it cut

in the manner we make a pen, the more readily to let the quicksilver into the quill.

As to the Palmer worms, I know nothing of them; he made no complaints of them. If they are a worm which always follow the other, they might have been equally affected. It seems the quicksilver might have been diffused by the sap to the very extremes of all the ramifications of the trees.

I should think it may not yet be too late to try the experiment, though I should prefer the latter end of January or beginning of February, for inserting the quicksilver. Perhaps credit might be given to the effect of such an experiment, by reasoning from the effect which mercury has upon the human body. But I leave that province to others, whose professions, and abilities are more adequate to the undertaking; ever preferring facts to theory, and that humble track to the labyrinths of fancy and imagination. At any rate, facts and successful experiments are most encouraging to the farmer, who ought to be led by a certainty of success or gain, as too many can ill bear unsuccessful labor or expense. I have heard of an attempt of the like kind as the foregoing, made without success; but this was attributed to an improper time of inserting the quicksilver, viz. in June.

HENRY MARCHANT.

#### OF THE MOISTURE OF THE SOIL.—WATERING.

From Lindley's Horticulture.

It has already been shown that water is one of the most important elements in the food of plants, partly from their having the power of decomposing it, and partly because it is the vehicle through which the soluble matters found in the earth are conveyed into the general system of vegetation. Its importance depends, however essentially upon its quantity.

We know, on the one hand, that plants will not live in soil which, without being chemically dry, contains so little moisture as to appear dry; and on the other hand, an excessive quantity of moisture is, in many cases, equally prejudicial. The great points to determine are, the amount which is most congenial to a given species under given circumstances, and the periods of growth when water should be applied or withheld.

When a plant is at rest, that is to say, in the winter of northern countries and the dry season of the tropics, but a small supply of water is required by the soil, because at that time the stems lose but little by perspiration, and consequently the roots demand but little food; nevertheless, some terrestrial moisture is required by plants with perennial stems, even in their season of rest, because it is necessary that their system should, at that time, be replenished with food against the renewal of active vegetation: hence, when trees are taken out of the earth in autumn, and allowed to remain exposed to a dry air all the winter, they either perish, or are greatly enfeebled. If, on the other hand, the soil in which they stand is filled with moisture, their system is distended with aqueous matter at a time when it cannot be decomposed or thrown off, and the plant either becomes unnaturally susceptible of the influence of cold in rigorous climates, or is driven prematurely

into growth, when its new parts perish from the unfavorable state of the air in which they are then developed. The most suitable condition of the soil, at the period of vegetable rest, seems to be that in which no more aqueous matter is contained than results from the capillary attraction of the earthy particles.

Nevertheless, there are exceptions to this, in the case of aquatic and marsh plants, whose peculiar constitution enables them to bear with impunity, during their winter, an immersion in water; and in that of many kinds of bulbs, which, during their season of rest, are exposed to excessive heat. The latter plants are, however, constructed in a peculiar manner; their roots are annual, and perish at the same time as the leaves, when the absorbent organs are all lost, so that the bulb cannot be supposed to require any supply of moisture, inasmuch as it possesses no means of taking it up, even if it existed in the soil. This will be again adverted to in a future chapter.

It is when plants are in a state of growth that an abundant supply of moisture is required in the earth. As soon as young leaves sprout forth, perspiration commences and a powerful absorption must take place by the roots; the younger the leaves are, the more rapid their perspiratory action; their whole epidermis must, at that time, be highly sensible to the stimulating power of light; but as they grow older their cuticle hardens, the stomates become the only apertures through which vapor can fly off, and by degrees even these apertures are either choked up, or have a diminished irritability. As a general rule, therefore, we are authorized to conclude that the ground should be abundantly supplied with moisture when plants first begin to grow, and that the quantity should be diminished as the organization of a plant becomes completed. There are, however, some especial cases which appear to be exceptional, in consequence of the unnatural state in which we require plants to be preserved for our own peculiar purposes. One of the effects of an extensive supply of moisture is to keep all the newly formed parts of a plant tender and succulent, and therefore such a constant supply is desirable when the leaves of plants are to be sent to table, as in the case of spinach, lettuces, and other oleraceous annuals. Another effect is, to render all parts naturally disposed to be succulent much more so than they otherwise would be; thus we find market-gardeners deluging their strawberry plants with water while the fruit is swelling, in order to assist in that, to them, important operation. While, however, in this case, the size of the fruit is increased by a copious supply of water to the earth, its flavor is, in proportion, diminished; for, in consequence of the rapidity with which the strawberry ripens, and, perhaps, the obstruction of light by its leaves, the excess of aqueous matter taken into the system cannot be decomposed, and formed into those products which give flavor to fruit; but it must necessarily remain in an unaltered condition.

It is for the reason just given, that the quantity of water in the soil should be diminished when succulent fruit is ripening; we see this happen in nature, all over the world, and there can be no doubt of its being of great importance. Not only is the quality of such fruit impaired by a wet soil, as has just been shown, but because of its low

perspiratory power the fruit will burst from excess of moisture, as occurs to the plum and grape in wet seasons. The melon, although an apparent exception to this rule, is not really so; that fruit acquires its highest excellence in countries where its roots are always immersed in water, as in the floating islands of Cashmere, the irrigated fields of Persia, and the springy river-beds of India. But it is to be remembered that the leaves of this plant have an enormous perspiratory power, arising partly from their large surface, and partly from the thinness and consequent permeability of their tissue, so that they require a greater supply of fluid than most others; and, in the next place, the heat and bright light of such countries are capable of decomposing and altering the fluids of the fruit with a degree of rapidity and force to which we can here have no parallel. In this country the melon does not succeed if its roots are immersed in water, as I ascertained some years ago, in the garden of the Horticultural Society, by repeated experiments. Melons were planted in earth placed on a tank of water, into which their roots quickly made their way; they grew in a curvilinear iron hot-house, and were trained near to the glass, and consequently were exposed to all the light and heat that can be obtained in this country. They grew vigorously and produced their fruit, but it was not of such good quality as it would have been had the supply of water to the roots been less copious. Thus, in the tropics, the quantity of rain that falls in a short time is enormous; and plants are forced by it into a rapid and powerful vegetation, which is acted upon by a light and temperature bright and high in proportion, the result of which is the most perfect organization of which the plants are susceptible: but, if the same quantity of water were given to the same plants at similar periods in this country, a disorganization of their tissue would be the result, in consequence of the absence of solar light in sufficient quantity.

The effect of continuing to make plants grow in a soil more wet than suits them is well known to be not only a production of leaves and ill-formed shoots, instead of flowers and fruit, but, if the water is in great excess, of a general yellowness of appearance, owing, as some chemists think, to the destruction by the water, of a blue matter which, by its mixture with yellow, forms the ordinary verdure of vegetation. If this condition is prolonged, the vegetable tissue enters into a state of decomposition, and death ensues. In some cases the joints of the stem separate, in others the plant rots off at the ground, and all such results are increased in proportion to the weakness of light, and the lowness of temperature. De Candolle considers that the collection of stagnant water about the neck of plants prevents the free access of the oxygen of the air to the roots; but it seems to me that much more mischief is produced by the coldness of the soil in which water is allowed to accumulate. It seems also probable that the extrication of carburetted hydrogen gas is one cause of the injury sustained by plants whose roots are surrounded by stagnant water; but upon this point we want much more satisfactory evidence than we yet possess.

It is because of the danger of allowing any accumulation of water about the roots of plants that drainage is so very important. In very

bibulous soils this contrivance is unnecessary; but in all those which are tenacious, or which, from their low situation, do not permit superfluous water to filter away freely, such a precaution is indispensable. No person has ever seen good fruit produced by trees growing in lands imperfectly drained; and all experienced gardeners must be acquainted with cases where wet unproductive borders have been rendered fruitful by contrivances which are only valuable because of their efficiency in regulating the humidity of the soil. Mr. Hiver (*Gard. Mag.* v. 60) speaks of the utility of mixing stones in great quantities with the soil, "as they prevent the accumulation of water in very wet weather, and retain sufficient moisture for the purposes of the plant in dry seasons;" and, when we hear of such precautions as are detailed in the following good account of preparing a vine border we only learn how important it is to provide effectually for the removal of superfluous water from around the roots, and how useless a waste of money is that which is expended in forming deep rich beds of earth.

"In preparing a vine border," says Mr. Griffin, of Woodhall, a successful grower of grapes, "one foot in depth of the mould from the surface is cleared out from the whole space; a main drain is then sunk parallel to the house, at the extremity of the border, one foot lower than the bottom of the border; into this, smaller drains are carried diagonally from the house across the border. The drains are filled with stone. The cross drains keep the whole bottom quite dry; but if the sub-soil be gravel, chalk, or stone, they will not be necessary. The drainage being complete, the whole bottom is covered with brick, stone, or lime rubbish, about six inches thick, and on this is laid the compost for the vines." (*Hort. Trans.* iv. 100.)

The practice of placing large quantities of potsherds or broken tiles at the bottom of tubs, or pots or other vessels in which plants are rooted, is only another exemplification of the great necessity of attending to the due humidity of the soil, and to the prevention of stagnant water collecting about the roots; and the injury committed by worms, upon the roots of plants in pots, is chiefly produced by these creatures reducing the earth to a plastic state, and dragging it among the potsherds so as to stop up the passage between them and destroy the drainage.\*

One of the means of guarding the earth against an access on the one hand, and a loss on the other, of too much water, is by paving the ground with tiles or stones; and the advantages of this method have been much insisted upon. But it is certain that, in cold summers at least, such a pavement prevents the soil from acquiring the necessary amount of bottom heat; and it is probable that, what with this effect, and the obstruction of a free communication between the at-

\* [Glazed flower-pots are totally unfit for most plants, except with the most careful attention to drainage, and even then they are much inferior to common unglazed ones. The latter permit the excess of water to escape through their porous sides, which is impossible in the glazed pot; in which, if the aperture at the bottom become stopped, the earth is sodden with water, the plant suffers and soon perishes. A. J. D.]

mosphere and the roots of a plant, the practice is disadvantageous rather than the reverse.

More commonly recourse is had to the operation of simple watering, for the purpose of maintaining the earth at a due state of humidity, and to render plants more vigorous than they otherwise would be; an indispensable operation in hot-houses, but of less moment in the open air. It is, indeed, doubtful whether, in the latter case, it is not often more productive of disadvantage than of real service to plants. When plants are watered naturally, the whole air is saturated with humidity at the same time as the soil is penetrated by the rain; and in this case the aqueous particles mingled with the earth are very gradually introduced into the circulating system: for the moisture of the air prevents a rapid perspiration. Not so when plants in the open air are artificially watered. This operation is usually performed in hot dry weather, and must necessarily be very limited in its effects; it can have little if any influence upon the atmosphere: then, the parched air robs the leaves rapidly of their moisture, so long as the latter is abundant; the roots are suddenly and violently excited, and after a short time the exciting cause is suddenly withdrawn by the momentary supply of water being cut off by evaporation, and by filtration through the bibulous substances of which soil usually consists. Then again, the rapid evaporation from the soil in dry weather has the effect of lowering the temperature of the earth, and this has been before shown to be injurious (p. 113); such a lowering, from such a cause, does not take place when plants are refreshed by showers, because at that time the dampness of the air prevents evaporation from the soil, just as it prevents perspiration from the leaves. Moreover, in stiff soils, the dashing of water upon the surface has after a little while the effect of "puddling" the ground and rendering it impervious, so that the descent of water to the roots is impeded, whether it is communicated artificially or by the fall of rain.\* It is, therefore, doubtful whether artificial watering of plants in the open air is advantageous, unless in particular cases; and most as-

\* [No error is more common in this country than surface-watering newly transplanted trees; and we do not hesitate to affirm that full one half the failures, in our dry summers, arise from this injudicious practice. By pouring water daily on the top of the ground, under a powerful sun and strong wind, the surface becomes so hard that access of the air to the roots is almost precluded; and the water rarely penetrates more than a couple of inches: while the operator imagines he is supplying the thirsty roots with abundant moisture, he is doing them an injury by the application of a very transient stimulus, which is followed by an increased sensibility to the drought. In late spring planting, it is always preferable to water abundantly in the hole, while planting the tree, before filling in the upper layer of soil. This will in most cases suffice, until the tree becomes sufficiently established by the emission of new rootlets to support itself; and also serves to ensure its growth by filling up all the small hollows around the lesser fibres. In seasons of continued drought, when it becomes absolutely necessary to water flagging trees, two or more inches of the surface soil should always be removed, the trees watered copiously, and the earth replaced before the surface dries. This will prevent evaporation and the encrusting of the ground, and the moisture will be retained for a much longer period.—A. J. D.]

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surely, if it is done at all, it ought to be much more copious than is usual. It is chiefly in the case of annual crops that watering artificially is really important; and with them, if any means of occasionally deluging ground can be devised, by means of sluices or otherwise, in the same way as we water meadows, it may be expected to be advantageous.\* Mildew, which is so often produced by a dry air acting upon a delicate surface of vegetable tissue, is completely prevented in annuals by very abundant watering.† The ravages of the *botrytis effusa*, which attacks spinach; of *acrosporium monilioides*, which is found on the onion; and the mildew of the pea, caused by the ravages of *erysiphe communis*, may all be stopped, or prevented, by abundant watering in dry weather. Mr. Knight first applied this fact to the securing a late crop of peas for the table, in the following manner:—

The ground is dug in the usual way, and the spaces which will be occupied by the future rows are well soaked with water. The mould upon each side is then collected, so as to form ridges seven or eight inches above the previous level of the ground, and these are well watered; after which, the seeds are sowed, in single rows along the tops of the ridges. The plants very soon appear above the soil, and grow with much vigor, owing to the great depth of the soil and abundant moisture. Water is given rather profusely once in every week or nine days, even if the weather proves showery; but, if the ground be thoroughly drenched with water by the autumnal rains, no further trouble is necessary. Under this mode of

\* ["In the vicinity of Liegen (a town in Nassau,) from three to five perfect crops of grass are [annually] obtained from one meadow; and this is effected by covering the fields with river water, which is conducted over the meadow in spring by numerous small canals. This is found to be of such advantage, that supposing a meadow not so treated to yield 1000 lbs. of hay, then from one thus watered 4-5000 lbs. are produced. In respect to the cultivation of meadows, the country around Liegen is considered to be the best in all Germany." Liebig, *Organ. Chem.* p. 105.—A. G.]

† [The mildew which attacks the young fruit of the foreign grape, when reared in the open air, is one of the most troublesome to the cultivator in this country. An effectual remedy is the flowers of sulphur dusted over the bunches with a dredging-box (or the solution applied with a syringe,) when the grapes are of the size of small peas. But the most certain prevention of this, as well as most diseases to which plants are subject, consists in keeping the vines in a thrifty and vigorous condition. The first crop or two of a young thrifty vine is almost invariably fine and free from mildew; but every subsequent year (if the common mode of pruning is followed,) as the plant grows older, the proportion of fair fruit is smaller, until at last nothing but shrivelled and mildewed bunches are seen. By laying down half of the long shoots of each vine annually, thus forming new plants, and never allowing the same to bear more than two years, a full crop, free from rust or mildew, may be obtained annually. Even the finer native sorts, as the Isabella, are sometimes liable to mildew on old vines: when this occurs, they should be headed back, to bring up a supply of young wood, and plentifully manured. The young and thrifty shoots will then have sufficient vigor to withstand the attacks of the mildew, to which the enfeebled fruit produced from the old wood is so liable.—A. J. D.]

management, the plants will remain perfectly green and luxuriant till their blossoms and young seed-vessels are destroyed by frost, and their produce will retain its proper flavor, which is always taken away by mildew. (*Hort. Trans.*, ii. 87.)

#### SAVING GRASS SEEDS.

From the Kentucky Farmer.

**Mr. Editor:**—During the first and second years of the publication of your valuable journal, there appeared in it several articles recommending to farmers in Kentucky, the policy and propriety of saving our own grass seeds, and the best mode of doing it, especially of saving clover seed. As I had felt the annual purchase of grass seeds a heavy tax, I was encouraged by your articles to make the experiment of saving my own, and I have been entirely successful. For the want of other means, in saving timothy, orchard grass, and blue grass seeds, I used the common grain cradle, with the fingers set a little closer to the scythe than for cutting wheat. The cradler makes his stroke, then holding the cradle with his right hand gathers the straws (which are cut above the blades) with his left, until a handful is gathered, when it is dropped, and bound in small bundles: one binder to two cradlers; the bundles are shocked without capping, and remain until they receive three or four rains, after which, when entirely dry, they are moved to a floor and trodden out by horses, or thrashed on a sheet and fanned with a common wheat fan, by turning it very slow. Blue grass seed may be cleaned, after being trodden, by rubbing it through a common meal sifter; and is worth twice as much prepared in this way as the stripped seed is, because each seed falls separate in sowing. The seed thus saved from good grass, will generally sell for more than would the hay from the same ground. After thus cutting off the seed the hay may be mowed in the usual way. The best instrument for saving clover seed is also in the hands of every farmer, viz.: the scythe, to be used as follows: mow, or graze off close and clean, a thick set, smooth clover field, about the first of June, (not later than the tenth,) take all stock off, and it will spring up immediately with a fine growth of short straw with many heads well filled with seed. When the leaves begin to die, and the heads have generally turned brown, (which is generally about the middle of July,) put in all your scythes of a damp day, or dewy morning; cutting close to the ground. Let one hand to two mowers follow immediately with a rake, and rake into small piles of size convenient to be thrown with a pitch fork into your wagon; let it remain in these piles until it takes three or four good rains; after it is dry it may be hauled in, the wagon passing between two rows of piles, with one hand to throw from each side, and one to tread it in the wagon. A wagon body with side boards, thus filled will make about half a bushel of clean seed. A moderate treading or flailing will separate the heads from the straw, which last may be raked out; after which the clover is ready for sowing in the chaff; and sowed at the rate of a bushel and a half to the acre,

is as good, if not better than clean seed. If you wish to clean it, keep putting down and raking out straw until the floor is about three inches deep with heads and bowls; tread with six or eight horses one day, and fan out by turning a common wheat fan slowly; then tread two days more, and fan out again, and pass the whole through a meal sifter. These last operations are laborious, disagreeable and tedious, and should be performed in dry cold weather. From about sixteen acres thus managed, year before last, I saved enough seed in the chaff to sow about one hundred acres for myself, and sold sixty-seven dollars' worth of clean seed. For the last four years I have sold all these varieties of seeds, besides having enough to sow bountifully for myself, and this last is one of the greatest advantages of saving your own seeds, as they thus cost you but little you sow more bountifully, which is abundantly repaid by heavier crops of grass. I believe a bushel of clean seed to five acres is nearer the proper portion than a bushel to ten acres. I have sown a large field with clover, timothy and orchard grass in the following proportions for ten acres: one bushel of clover, one of timothy, and six of orchard grass seed. I find it an admirable mixture, either for mowing or grazing, and though very thick, still it is not too much so.

In conclusion, it is but justice to say that I think the articles in your paper, above alluded to, have been the chief causes of my saving and making enough by grass seeds, to pay for all four of my agricultural papers as long as I live.

ROBERT W. SCOTT.

Locust Hill, near Frankfort,  
July 20, 1841.

#### MODES OF TRANSMUTING WHEAT TO CHAFF.

From the Cultivator.

Mr. N. Sutherland, a staunch believer in the conversion of wheat into chaff, gives the following methods by which that conversion may be effected. As the most of them are not difficult of trial, perhaps some may have the curiosity to prove them; and by performing the feat, entitle themselves to Mr. Ruffin's premium:—

"Wheat may be transmuted into chaff by taking a few heads at harvest, and laying them on the ground to grow where they will not be disturbed, the land to be rather poor; or some heads may be taken that are scattered at harvest in the stubbles and grow, taking them up late in the fall, and setting them in a wheat field; or some wheat may be put in a dish, and wetted and dried as it is sprouting several times, and it will come up chaff; or it may be fed or mowed off when eight or nine inches high; any of these methods will change wheat to chaff. There is another cause that is frequently operative, and that is the frequent freezing and thawing of the surface in moist lands, which, by drawing the roots partly out of the ground, so injures the plant that it cannot produce wheat."

[We thank Mr. Sutherland for thus descending from loose generalities to particulars, and pointing out so many different and easy modes by which

wheat may be converted to cheat. We trust now that believers will try some of the most easy and sure of these experiments; and then, (if Mr. S. is right,) the difficulty will not be to find some one entitled to our offered premium of \$100, but who shall first present and prove his claim. We very readily abide the issue. All the steps of several of the modes of experiment indicated above are susceptible of the *clearest proof*; and all we require is that *full proof* of the facts shall be made out and exhibited.—E.D. F. R.]

#### EXPERIMENTS ON NITRATE OF SODA AND SALTPETRE. BY W. STRATFORD DUGDALE, M. P.

From the Journal of the Royal Agricultural Society of England.

Many communications having been forwarded to the society on the value of saltpetre and nitrate of soda as manures, perhaps the result of an experiment I have made upon two fields of wheat, eight miles distant from each other, may not be uninteresting. One field is of a light gravelly soil, which was manured with a coat of marl in the autumn before the wheat was sown. The other field is of a stiff clayey soil, and was manured with lime in the autumn. About the middle of last April I measured off three quarters of an acre in the field of gravelly soil, and sowed one quarter with saltpetre, one with nitrate of soda, and left the remaining quarter with nothing but the marl.

I also measured off four quarters of an acre in the clayey field, and sowed one quarter with saltpetre, one with nitrate of soda, one with soot, and left the remaining quarter with lime only. In both cases the quantity of saltpetre and soda was as one hundred weight to the acre. In the gravelly field the produce of the quarter of an acre with nitrate of soda was, of—

Wheat . . . 13 bush. 3 pecks, weighing 63 2-3 lbs. per bush.  
Straw . . . 9 cwt. 72 lbs.  
Chaff and waste, 2 qrs. 27 lbs.

Saltpetre,—  
Wheat . . . 10 bush. 2 1-2 pecks, weighing 64 1-4 lbs. per bush.  
Straw . . . 8 cwt. 56 lbs.  
Chaff and waste, 3 qrs. 24 lbs.

Marl only,—  
Wheat . . . 10 bushels 2 pecks, weighing 64 lbs. per bush.  
Straw . . . 8 cwt. 54 lbs.  
Chaff and waste, 1 cwt.

In the clayey field:—The produce of half an acre, manured with—

	Bush.	pk.	lbs.	
Nitrate of soda, wheat . . .	18	1		weighing 64 per bush.
Do. with saltpetre . . .	17	2		63
Do. with soot . . .	17	1		63 1-3
Do. with lime only . . .	16	0		62 2-3

In this experiment my bailiff did not measure the quantities of straw and waste.

I also sowed some soda and saltpetre, to the same amount per acre, on some grass-land.

I was not at home when the hay was cut; but am informed that the crop was greatly increased, particularly by the nitrate of soda.

#### 2. Trial of nitrate of soda. By Joshua Rodwell, esq.

1839, July 12.—1 cwt. per acre upon lucerne,

after the first mowing, the first year. Benefit not equal to the cost, and much inferior to the same cost in soot, by which it was tested: the soot at 8d. per bushel.

July 20.—1 cwt. per acre upon beet-root; every alternate stretch 6 acres. Hoed in with the second hoeing. Benefit not equivalent to the cost; scarcely apparent, except in the color of the leaves.

July 26.—1 cwt. per acre for Swedish turnips; part after the first, and some after the second hoeing. 4 acres. The effect scarcely apparent; by no means equal to the cost.

July and August.—1 cwt. per acre for white turnips, in every stage of their growth after being well up, before and after hoeing. No benefit.

1840, May 23.—1 cwt. per acre upon pease, 2 acres; barley, 2 acres; wheat, 2 acres. Benefit not equivalent to the cost, but the greatest upon the barley.

N. B. The white clover after the barley failed where the nitrate was used.

June 1.—Wheat, 2 acres; barley, 10 acres. 1 cwt. an acre. The barley increased in quantity equal to the cost, but layer not so good as where no soda was sown; the wheat increased in quantity, but not equal in quality. I have since found that the layer of white clover is almost destroyed.

N. B. In the above the experiments are made upon dry soils, with sand, sandy loams, and crag subsoils, and the lands in the common course of husbandry. The nitrate of soda 26s. per cwt.; and expenses of carriage and sowing 2s. per acre: and the experiments tested by very close observation, but not in weight or measure.

Alderton Woodbridge, May 10, 1841.

#### 3. Trials of nitrate of soda. By Charles Newman.

To the secretary—sir,—I am induced to offer you a few observations and a statement of the result of my experiments on nitrate of soda, as though not extensive, they may tend in some degree to confirm the interesting reports on the same subject in the last and former numbers of the Society's Journal. The first trial I made of it was in 1839, on wheat, oats, and grass; as far as the eye could discover, each of them made a very satisfactory progress in a few days after it was applied. Thus encouraged, I determined to make another trial, on a larger scale, the following year. I purchased my nitrate of soda at 21l. per ton, including cartage, and used it on all my crops:—

1. On part of a field of barley; in which I could perceive but little difference, the whole of the field being a heavy crop, and much laid.
2. On clover; the result was the same, which I attributed to the high condition of the land.
3. On spring-tares: two weeks after they were up the crop increased considerably, and was cut green for the horses.
4. On meadow: not quite so satisfactory as in the former year; this I considered arose also from the high condition of the land.
5. On wheat: this was an exceedingly thin crop, produced by the unfavorable autumn, the land being so wet when the seed was sown that half of it rotted; indeed the plant was so thin that I had determined to plough it up, but considered it an excellent opportunity to try the merits of the nitrate. Having



sown it on a part of the field, I was much surprised at seeing not only the wheat improve, but also the wire-weed, which continued to increase up to the time of harvest, and was so strong as to render reaping difficult. Considerably more than a load of this weed to the acre was left on the land. I mention this circumstance merely to prove the power of the nitrate to force even weeds, the natural produce of the soil, when the corn is not sufficiently thick on the ground to take up its nutritive properties.

6. On a field of oats which had been under the pro-

cess of draining, but where, in consequence of a continuation of rain, the operation had been suspended for a considerable time; the land, being continually saturated, was much out of condition. This I considered an excellent opportunity for experiments. In six days after the nitrate was sown it began to surpass the other part of the field, and continued to do so until harvest.

On each of the two last crops I housed and thrashed, separately, one acre that was sown with nitrate, and one that was not so sown, and I found the result as follows:—

	bl. pk.		bl. pk.		£. s. d.
One acre of wheat sown with nitrate of soda	20 0				
One ditto without	14 3	Increase	5 1	at 8s. 6d. per bushel	2 4 7½
	truss.		truss.		
Ditto straw with nitrate	72				
Ditto without	51½	Increase	20½	at 11d. per truss	0 18 9½
					3 3 5
Expense of nitrate and sowing					1 7 0
Profit on nitrate per acre of wheat					1 16 5

	bl. pk.		bl. pk.		
One acre of oats sown with nitrate of soda	60 3				
Ditto without	46 0	Increase	14 3	at 3s. 6d. per bushel	2 11 7½
	truss.		truss.		
Ditto straw with nitrate	120				
Ditto without	84	Increase	36	at 10d. per truss	1 10 0
					4 1 7½
Expense of nitrate and sowing					1 7 0
Profit on nitrate per acre of oats					2 14 7½

By this statement it will be seen that the increase on the wheat and on the wheat-straw is more than one-fourth; on the oats nearly the same, and on the oat-straw almost one-third.

In my experiments the nitrate of soda was only beneficial on land that was out of condition; if this should prove to be its general character, it will indeed be a valuable auxiliary as a top-dressing in the spring. There are but few farmers who have not a small portion of their land to which it may become useful. You are aware that a very great breadth of land in this island requires a stimulus to produce even a moderate

crop, while, to land which is naturally fertile and in a high state of cultivation, such assistance would prove injurious.

I purpose using a greater quantity of nitrate this season, with a view of trying its properties; and as it is very important not only to know how far it may prove beneficial to the first crop, but to examine the state of the land in the following season, I trust every member who may have the opportunity will not fail to make a report accordingly.

CHAR. NEWMAN.

Court Farm, Hayes,  
March 13, 1841.

#### MORE DISPUTES AMONG THE SELLERS OF BERKSHIRE HOGS.

From the Kentucky Farmer.

The following, over an anonymous signature, is from a farmer of Bourbon, whose proper name Mr. Bement has no right to know, since he has chosen to recognize him under his fictitious one. But we intend no offence to Mr. Bement (as it would be no compliment to X. Y. Z.) when we say that, whatever may be the standing of Mr. B. in New York, that of X. Y. Z., to say the least, is quite as respectable in Kentucky.

In relation to the matters in controversy, we wish it understood we shall take no other part than that which we deem will be of justice and impartiality to the parties. The controversy, we hope,

if continued, will dip deep into the true merits of the several varieties of swine, so that our readers may derive some useful information from it.—ED. K. F.

Bourbon county, July 24, 1841.

To the editor of the Kentucky Farmer—I have read in your last number a letter addressed to you by Mr. C. N. Bement, from near Albany, New York, in which he charges a correspondent from New York, 'X. Y. Z.,' with incorrectness; as he did not examine his hogs. Mr. B. would fain make your readers believe that my statements were incorrect. It was not my design to convey the idea that I had examined all the inferior lots of Berkshire hogs in the vicinity of Albany. No, they were such as had obtained celebrity abroad and favor at home, that I had designed to examine,

and of which I have written. The information given to me in New York in relation to Mr. Bement's hogs was such that I had no desire to see them. Whether or not injustice has been done him I cannot determine. Mr. B. wishes the devil to have his due. Surely he is as much entitled to it as any other individual, but not more than his advocates. I leave him and Mr. Lossing to settle the matter as to the size of their hogs; and there is no doubt he will inform Mr. B. by what system of breeding he has obtained those large Berkshires, that Kentucky farmers so justly prize. Your correspondent does not think it requires great acumen to discover the difference between the large and the small Berkshires. The dissimilarity is so great that any one at all acquainted with them can immediately detect each kind. If he will examine Lossing's piggery he will readily perceive the difference. He says in England they know of but one variety. Should Mr. B. pay a visit to Kentucky he will find four varieties, viz.: the large black Berkshire of Lossing, a white Berkshire imported by Letton, and another by Dr. Martin, and the small Berkshire purchased of C. N. Bement by Mr. Letton; all of which are apparently of very different breeds, but all claiming to be Berkshires.

As to large Berkshire sows being more prolific, B. says is all a *fol de rol*. I suppose the English of that is, it is all a lie. Now he proves by his own statements that it is true. He remarks it is not unfrequent for sows of this breed (and he states his are as large as Lossing's) to have from 12 to 16 pigs, and in one instance as high as 18 living pigs at one litter. Mr. B. says your correspondent omitted to inform you how many pigs from these great litters are raised. That, sir, is not my *look out*; all depends upon the attention the sows receive at pigging. In answer to Mr. B.'s charge that your correspondent would fain make the public believe that they (McFerren's hogs) were all purchased of Lossing, that charge is entirely gratuitous. I was informed that the most of them were either purchased of Lossing or descendants of his stock. Be that as it may, no censure can rest upon

X. Y. Z.

#### NOTES ON SANDY POINT ESTATE. NO. III.

To the Editor of the Farmers' Register.

*Sandy Point, July 10th, 1841.*

In "Notes on Sandy Point Estate, No. 1," it was stated that "all of the soil of the arable land was susceptible of the highest degree of improvement, and that, in its original and virgin state, it must have been highly productive." From a severe system of cropping, close grazing, and little attention to manuring, for a long succession of years, its original fertility has been greatly reduced. For the past 10 years, efforts have been made to restore to the soil a portion of its lost fertility; little grazing has been permitted, during that period, on any portion of the estate now under tillage. Clover has been extensively and successfully cultivated, and returned to the soil as a manuring; and considerable attention has been paid to the collection and application of putrescent manures; the results, however, of the general application of this latter manure have

proved but little satisfactory. For 10 years, prior to 1840, all of the manure which could be collected from the stables, winter farm yards, &c., up to the first of March of each year, was applied to the field to be planted in corn; all made in the subsequent spring months was piled up and allowed to rot and ferment until the spring of the following year, when it was also applied to the corn crop. For the number of years during which the application was made of the winter collected manure, consisting chiefly of unrotted and nearly entire corn-stalks, straw, shucks, &c. Mr. Bolling is of the opinion that little or no benefit was derived by the corn crop to which it was applied, and that from its coarse texture it formed a serious impediment in the after cultivation of the crop. The following wheat crop derived as little benefit as did the preceding corn crop. So far as I have seen this mode practised, my own opinion and experience coincide with that of Mr. Bolling. From the application of rotted manure to a corn crop, I have seen decided benefits; but from the usual mode in which it is piled up and unprotected from the influences of the hot summer's sun, drying winds and washing rains, and from becoming fire-langed or moulded, a very large proportion of manure thus piled up becomes a mass of dry, worthless vegetable fibre, scarcely worth the expense of hauling out, and can impart benefit to no crop. Such a mode is, at best, especially in a climate such as this, a most injudicious and wasteful one; a very large bulk of manure is lost, and so far from its strength becoming concentrated, all its gaseous, if not all its fertilizing properties are lost, and there is little left to compensate for the loss of bulk, labor, and time occupied in piling it up, and hauling and spreading it on the soil. From my own experience I have found the application of recent or unrotted manure to clover the best and most profitable application of it: laying it on early in the spring, when the leaves of the clover speedily cover and protect the manure. While the clover derives much benefit from this top-dressing, its greatly increased growth, well ploughed under in proper season, proves an excellent manuring, either for a wheat fallow, or ensuing corn crop. Last year (1840) the manure on this estate was applied as follows, 60 cart-loads of rotted manure were applied as a top-dressing on wheat, in January of that year. Nearly all of this was stable manure, and almost entirely covered with white mould. Little if any benefit resulted from the application. 316 loads of rotted cow-yard manure of the preceding spring were applied to an oat fallow. This was also very much moulded. Very little benefit was observable either to the preparatory oat or following wheat crop, as compared with that on which no manure had been applied. 959 loads, also of rotted mixed manure, being a pile of the preceding year's accumulation, was applied to corn ground. Much of this was also moulded; the bottom of the pile, being generally under water, was free from mould, and good. From this application the corn derived considerable benefit. 3070 loads of unrotted or recent manure from the stable and cattle yards were applied on clover intended for a wheat fallow, and also on clover intended for the corn crop of this present year. When applied on clover for wheat fallow no lime or calcareous matter had been applied to the soil. A small proportion of

that intended for corn had been limed. In both cases the increased growth of clover and weeds plainly exhibited the benefits of the application, as did also the improved crop of wheat this season, distinctly marking the limits of the manuring, as does also the now superior growth of young clover. So far as the corn crop has yet progressed, there is an evident improvement in its growth, as compared with that on similar soil on which no manure had been applied; but not as yet so decided or obvious as on the wheat crop. When prevented from hauling out all the manure collected during the winter and early spring months, prior to the middle of April, I have repeatedly applied it to clover, together with all collected during summer, so late in the season as the months of August and September, on young clover with very evident benefits. In this case no piling up was resorted to; leaving the accumulation of manure in the yards, to lay with a surface as little broken as possible, and protected by a covering of straw or other coarse litter, and keeping it as much as possible saturated with water. By this mode manure will be prevented from becoming moulded, decomposition will progress slowly, comparatively little bulk will be lost, and little if any of its fertilizing properties. So far as my observation and experience have led me in this climate, the application of all putrescent manure to young clover, is the most economical and profitable application that can be made of it. And the less the degree of fermentation which has taken place previous to its application the better. When unrotted straw, cornstalks, shucks, &c., have been applied to a good stand of clover, early in the spring, I have never experienced any difficulty in ploughing them under in the fall or winter months, and have generally found them almost entirely decomposed. When not completely covered and protected by a full growth of clover and weeds, decomposition will progress more slowly; the underlaying soil will however derive considerable benefit, but not equal to that derived from an increased growth of clover, when applied to that valuable fertilizer. In future years it is contemplated that this will be the general mode of applying all putrescent manures on this estate, securing first a good stand of clover. I have invariably found clover manured in the spring to withstand the summer droughts of this climate much better than that on which no such application had been made; and as the increased breadth of land rendered calcareous by the application of lime or marl progresses, a preference will be given to soils which have received such applications, and on which manures will doubtless prove the most profitable.

The ploughing under of green crops (other than clover) for manure has been only recently attempted here; experience has yet to test their value. No doubts however are entertained as to their profit and utility. Pine leaves applied to limed soils have here proved beneficial.

Before the year 1831 very little lime had been used on any portion of the estate; and from that period up to the beginning of 1840, 170 acres on the Rowe farm, 260 on Teddington, and 90 on the Neck farm, equal in all to 520 acres, had received a dressing of oyster shell lime, at a rate per acre varying from 90 to 120 bush-

els, or in all, as near as can now be ascertained, equal to 3000 hogsheds of shells. The annual applications were given to the fields planted in corn; and selecting the poorest or least productive portions of these fields, and consequently on detached portions of each farm. The benefits resulting from the application have been most decided; the increased growth of weeds, clover, corn and wheat, point out each application as distinctly as if each were separately fenced off. The increased products on these particular spots have not been accurately ascertained or noted; but when, by the eye comparing them with surrounding land not limed, the increase is not less than double in corn and threefold in wheat and clover, and gives ample encouragement to persevere in its application. In addition to the above quantities of shell lime used during the period above mentioned, from 1000 to 1200 bushels of marl were brought over from the opposite side of the river, in Surry county, where there are extensive deposits of marl, and were applied to a corner of a field on Teddington. The quantity of lime contained in the marl was not known, nor is it now recollected how much was applied per acre; supposed to have been a slight dressing; and as probably all of the corner of land so marled, from its near vicinity to several houses, has had ashes applied to it occasionally, it is doubtful how much improvement may justly be attributed to the application of the marl. The crop of clover on it of this season is equal, if not superior, to that on adjoining limed land.

In 1840 the purchase of calcareous matter was largely entered into on this estate. 76 hhds. of oyster shells were purchased at 75 cents per hhd., \$57.00, and 1962 hhds. at 70 cents, \$1373.40, in all 2038 hhds., costing \$1430.40. In addition to these, 90 casks of northern stone lime were purchased, costing 90 cents per cask, \$81.00; and early in the season, a contract was entered into for a supply of 40,000 bushels of marl, from a bank on the Surry side of the river, distant about 7 miles, for 4 cents per bushel, and of which 20,000 bushels were delivered during the year, making the cost of marl for the year \$800.00; and in all, for marl, stone lime and shells, a total of \$2311.40. Of the above quantities not more than 300 hhds. of shells were burned, and applied to the soil in 1840, at the rate of from 100 to 120 bushels per acre, all of the stone lime at the rate of 60 bushels per acre, and 5200 bushels of marl, at the rate of 130 bushels per acre. (A large application of lime and marl was made early this year, and which will be referred to in a subsequent communication.) The above quantity of marl will appear to many a very slight application. When the contract was entered into, the contractors stated the strength of the marl to be 85 per cent. of lime; and no doubt they were correct, so far as a particular selected specimen was concerned; but not so as regards the general body of marl, which, from subsequent analysis, proved to be only 63. Our subsequent applications have consequently been increased so as to give upwards of 100 bushels of lime per acre; the object for the present being to give as large a surface as possible a speedy dressing. Improvement to the soil will in the meantime be progressing; and an increased application will immediately follow. Considering the facilities, which the deposits of marl presents

from which this supply is obtained, for digging, the short distances it has to be lightened, as also the facilities afforded for speedily discharging a cargo, on various points of the estate, 4 cents a bushel may justly be considered a high price for this marl. The then existing circumstances which induced the contract, however, justified the giving of that price, rather than suffer disappointment by not obtaining a necessary supply in due season. The same marl, of equal quality, and from the same deposit, is now offered at a reduced price.

The application of shell lime on this estate is very expensive. The wood necessary for burning the shells has to be carted a distance of from two to three miles; and it is estimated that each bushel of lime, when ready for application to the soil, costs not less than 12 cents per bushel; and it is also estimated that an equal quantity of lime per acre will be furnished from marl at  $\frac{1}{10}$ , costing 3 or 3½ cents per bushel at about one-third the expense of shell lime. It is in contemplation to discontinue the use of the latter here beyond the supply of shells now on hand, and use the marl in preference, if it shall be found, after a fair trial, to act equally well on the soil, and marl of that strength can continue to be procured, in sufficient quantities for the demands of the estate, at not more than 3 cents per bushel.

A dressing of calcareous manure was given to a twenty-acre lot previous to planting corn in 1840. On one half of the lot shell lime was applied at the rate of 100 bushels per acre; on the other half marl at the rate of 130 bushels containing  $\frac{1}{10}$  of lime. The crop of corn was much injured by the ravages of the cut worm. Until late in June no difference was observable on the crop between the shell lime and marl, nor was any observed on the succeeding crop of wheat, recently reaped; and the young clover now stands equally well over the lot.

On another portion of land, of little over 12 acres, immediately in front of Teddington barn, after a dressing of rotted manure, shell lime, at the rate of 120 bushels per acre, was applied previous to planting corn, also in 1840. This portion of ground, though of fine texture of soil and well located for receiving occasional aid from manure, had failed comparatively for several years to produce a crop of either corn or wheat. The crop of corn last year was judged to be equal to 30 or 35 bushels per acre, and the crop of wheat reaped this season as being not less than 15 bushels per acre. The benefits to this portion of ground have consequently been highly satisfactory; the stand of young clover is now very fine.

In preparing the corn field on the Neck farm in 1840, 20 acres on one side of the field, considered as being too poor to produce a crop of corn, had a dressing of manure from the stable yard applied to it, and a crop of oats sown. This crop resulted miserably, not even sufficient to cover the ground; what was of them were ploughed down soon after ripening, and from which a scanty volunteer growth presented itself. In the fall, previous to sowing wheat, 15 acres of it received a dressing of shell lime at the rate of 100 bushels per acre. On the 7th November wheat was sown on the portion limed, as also on that not limed, and which had the equal benefit of manure, and on a portion of it a tolerable crop of pea vines ploughed under. The adjoining land, which had been in corn, and

separated only by a water furrow, was also sown on the same day. From the earliest stage of the growth of the wheat, that on the limed portion kept far in advance. The crop reaped from it this season was heavy, and considered to be equal to 25 bushels per acre; while that on the portion of the 20 acres not limed has certainly not produced an average of more than five bushels per acre, and was considered as being formerly the best portion of the 20 acres, all of which previous to liming would not probably have produced an average of 4 bushels. The crop of wheat from the adjoining land which had been in corn, and formerly considered as being greatly superior to that portion limed, produced a crop whose average will little if any exceed from 8 to 10 bushels per acre. A more striking instance of the benefits resulting from the application of lime I have never seen. Can the most sceptical desire a stronger proof, or its advocates a more gratifying result? Other results will subsequently be reported. In the mean time, I remain your humble and obedient servant,

A. NICOL.

#### GROWTH OF PLANTS WITHOUT MOULD.

From Webster's Appendix to Liebig's Organic Chemistry.

"Some account of a suspended plant of *Ficus Australis*, which was grown for eight months without earth in the stove of the Botanic Garden at Edinburgh. By Mr. William Macnab, Superintendent of the garden." (From the 3d volume of the Edinburgh Philosophical Journal, p. 77. Slightly abridged.)

"*Ficus Australis* is a native of New South Wales, and was introduced into the British gardens in 1789, by the Right Honorable Sir Joseph Banks. The plant is not uncommon now in collections in this country, where it has been usually treated as a greenhouse plant; and in a good greenhouse it thrives tolerably well, although it seems rather more impatient of cold than many of the plants from the same country.

"When I came to superintend this garden in 1810, I found a specimen of it among the greenhouse plants, where it remained for some time afterwards; but owing to the bad construction of the greenhouse here, and the very hardy way in which I was obliged to treat the plants in that department, I did not find the *ficus* thrive so well as I had been accustomed to see it do. I concluded that it required more heat, and in the spring of 1811 I placed it in the stove, when it soon began to grow as vigorously as I had ever seen it do.

"The stem of the plant was about a foot in height before any branches set out; on one of the branches, above two feet from the junction with the stem, a root was put out. As soon as this had grown about a foot long, I placed a pot under it. As soon as I found this pot filled with roots, I determined to try whether it supplied plentifully with water it would support the whole plant.

"In August, 1816, I left off watering the original large pot, and supplied the smaller one very freely with water; I kept it in this state for about eight months, till the earth in the large pot was so completely dry, that I was satisfied the plant could receive no nourishment from it. The shrub

continued quite as healthy and vigorous as when supplied with water at the original root. In the spring of 1817, I took off the large pot in which the original roots were, and exposed the roots to the full rays of the sun, by gradually shaking off the dry earth from among them; this had no ill effect on the plant, as it still remained perfectly healthy; it, however, had the effect of making roots be put out freely all over the plant, much more so than had hitherto been the case.

"In the latter end of the summer of 1817, I placed a root in a third pot, which was put out from a branch about three feet from the junction with the stem, and on the opposite side of the plant from that which had supported it for some time past. As soon as I found this pot filled with fibres, I supplied it freely with water, and kept the other small pot dry, as I had done before with the original root. I found the plant still continue equally vigorous as before. In the spring of 1818, I took away the second pot, which I had for some time kept dry, and exposed the roots gradually, as I had formerly done with those in the original pot.

"The third pot, which now alone supported the plant, was four feet from the lower end of the stem, and very near to the extremity of the branch, the original roots, and the second set of roots, both hanging loose in the air. The plant, however, remained in this state for nearly a year in perfect health. In May, 1819, I took a very small pot, about two inches in diameter, and filled it with earth as I had done the others, and set it on the surface of the earth in the third pot which now supported the plant. Into this small pot I introduced a root which came from the same branch, a little below the one which was in the larger (third) pot. As soon as the small pot was filled with roots, I supplied it freely with water, and gave the larger pot none but what might happen to run through the small one. After remaining in this state for near two months, I cut the branch off between the two pots; I still supplied the small pot only with water, but occasionally at this time threw a little water over the whole plant. It continued to look as well as it had done before.

"In July last, 1819, I examined the small pot (the fourth used) and found it completely filled with roots, very little earth remaining in the pot. By this time the plant appeared to me to be very tenacious of life, and I determined to try whether it would live wholly *without earth*. I accordingly took the small (fourth) pot off, and gradually worked off what little earth remained among the roots. I at this time, however, threw plenty of water over the leaves, generally twice in the day: this was done about the latter end of July, when the weather was very warm, but it seemed to have no bad effects on the *Ficus*.

"What may appear rather remarkable is, that though this *Ficus* is a plant by no means free in producing fruit in the usual way of cultivating it, this specimen, quite suspended without a particle of earth, was loaded with figs during the months of September, October, and part of November. Two fruit were produced at the axilla of almost every leaf, and these were quite as large as I had ever seen on the plant in the hot houses of Kew Garden. The plant is beginning to grow or extend, although it has now been suspended

for eight months without a particle of earth, and during that time we have had very hot weather, and also very cold weather. Roots have been put out very freely all over the stem and branches during that time. The plant now (February, 1819,) measures  $7\frac{1}{2}$  feet between the extremity of the root and the top of the branches, and the stem at the thickest part is  $5\frac{1}{2}$  inches in circumference."

#### EXPERIMENTS AND OBSERVATIONS ON THE ACTION OF CHARCOAL FROM WOOD ON VEGETATION. BY EDWARD LUCAS.

From the same.

"In a division of a low hothouse in the botanical garden at Munich, a bed was set apart for young tropical plants, but instead of being filled with tan, as is usually the case, it was filled with the powder of charcoal, (a material which could be easily procured,) the large pieces of charcoal having been previously separated by means of a sieve. The heat was conducted by means of a tube of white iron into a hollow space in this bed and distributed a gentle warmth, sufficient to have caused tan to enter into a state of fermentation. The plants placed in this bed of charcoal quickly vegetated, and acquired a healthy appearance. Now, as always is the case in such beds, the roots of many of the plants penetrated through the holes in the bottom of the pots, and then spread themselves out; but these plants evidently surpassed in vigor and general luxuriance, plants grown in the common way, for example, in tan. Several of them, of which I shall only specify the beautiful *Thunbergia alata*, and the genus *Peireskia*, thrived quite astonishingly; the blossoms of the former were so rich, that all who saw it affirmed they had never before seen such a specimen. It produced, also, a number of seeds without any artificial aid, while in most cases it is necessary to apply the pollen by the hand. The *Peireskia* grew so vigorously, that the *P. aculeata* produced shoots several ells in length, and the *P. grandifolia* acquired leaves of a foot in length. These facts, as well as the quick germination of the seeds which had been scattered spontaneously, and the abundant appearance of young *Filices*, naturally attracted my attention, and I was gradually led to a series of experiments, the results of which may not be uninteresting; for, besides being of practical use in the cultivation of most plants, they demonstrate also several facts of importance to physiology. "The first experiment which naturally suggested itself, was to mix a certain proportion of charcoal with the earth in which different plants grew, and to increase its quantity according as the advantage of the method was perceived. An addition of  $\frac{1}{4}$  of charcoal, for example, to vegetable mould, appeared to answer excellently for the *Gesneria*, and *Gloxynia*, and also for the tropical *Aroids* with tuberous roots. The two first soon excited the attention of connoisseurs, by the great beauty of all their parts and their general appearance. They surpassed very quickly those cultivated in the common way, both in the thickness of their stems and dark color of their leaves; their blossoms were beautiful, and their vegetation lasted

much longer than usual, so much so, that in the middle of last November, when other plants of the same kinds were dead, these were quite fresh and partly in bloom. *Aroidæ* took root very rapidly, and their leaves surpassed much in size the leaves of those not so treated: the species, which are reared as ornamental plants on account of the beautiful coloring of their leaves, (I mean such as the *Caladium bicolor*, *Pictum*, *Pacile*, &c.,) were particularly remarked for the liveliness of their tints; and it happened here, also, that the period of their vegetation was unusually long. A cactus planted in a mixture of equal parts of charcoal and earth thrived progressively, and attained double its former size in the space of a few weeks. The use of the charcoal was very advantageous with several of the *Bromeliaceæ*, and *Liliaceæ*, with the *Citrus* and *Begonia* also, and even with the *Palmeæ*. The same advantage was found in the case of almost all those plants for which sand is used, in order to keep the earth porous, when charcoal was mixed with the soil instead of sand; the vegetation was always rendered stronger and more vigorous.

"At the same time that these experiments were performed with mixtures of charcoal with different soils, the charcoal was also used free from any addition, and in this case the best results were obtained. Cuts of plants from different genera took root in it well and quickly; I mention here only the *Euphorbia fastuosa* and *fulgens* which took root in ten days, *Pandanus utilis* in three months, *P. amaryllifolius*, *Chamædorea elatior* in four weeks, *Piper nigrum*, *Begonia*, *Ficus*, *Cecropia*, *Chiococca*, *Buddleja Hakea*, *Phyllanthus*, *Capparis*, *Laurus*, *Stiffia Jacquinia*, *Mimosa*, *Cactus*, in from eight to ten days, and several others amounting to forty species, including *Ilex*, and many others. Leaves, and pieces of leaves, and even *pedunculi*, or petioles, took root and in part budded in pure charcoal. Amongst others we may mention the *foliola* of several of the *Cycadææ* as having taken root, as also did part of the leaves of the *Begonia Telsairia*, and *Jacaranda Brasiliensis*; leaves of the *Euphorbia fastuosa*, *Oxalis Barriieri*, *Ficus*, *Cyclamen*, *Polygonum*, *Mesembrianthemum*; also, the delicate leaves of the *Lophospermum* and *Martynia*, pieces of a leaf of the *Agave Americana*; tufts of *Pinus*, &c.; and all without the aid of a previously formed bud.\*

"Pure charcoal acts excellently as a means of curing unhealthy plants. A *Doranthus excelsa*, for example, which had been drooping for three years, was rendered completely healthy in a very short time by this means. An orange tree which had the very common disease in which the leaves become yellow, acquired within four weeks its healthy green color, when the upper surface of the earth was removed from the pot in which it was contained, and a ring of charcoal of an inch in thickness strewed in its place around the

periphery of the pot. The same was the case with the *Gardenia*.

"I should be led too far were I to state all the results of the experiments which I have made with charcoal. The object of this paper is merely to show the general effect exercised by this substance on vegetation, but the reader who takes particular interest in the subject, will find more extensive observations in the "*Allgemeine deutsche Gartenzeitung*" of Otto and Dietrich, in Berlin.\*

"The charcoal employed in these experiments was the dust-like powder of charcoal from fir and pines, such as is used in the forges of blacksmiths, and may be easily procured in any quantity. It was found to have most effect when allowed to lie during the winter exposed to the action of the air. In order to ascertain the effects of different kinds of charcoal, experiments were also made upon that obtained from the hard woods and peat, and also upon animal charcoal, although I foresaw the probability that none of them would answer so well as that of pine-wood, both on account of its porosity and the ease with which it is decomposed.

"It is superfluous to remark, that in treating plants in the manner here described, they must be plentifully supplied with water, since the air having such free access penetrates and dries the roots, so that unless this precaution is taken, the failure of all such experiments is unavoidable.

"The action of charcoal consists primarily in its preserving the parts of the plants with which it is in contact; whether they be roots, branches, leaves, or pieces of leaves, unchanged in their vital power for a long space of time, so that the plant obtains time to develop the organs which are necessary for its further support and propagation. There can scarcely be a doubt also that the charcoal undergoes decomposition; for after being used five or six years it becomes a coaly earth; and if this is the case, it must yield carbon, or carbonic oxide, abundantly to the plants growing in it, and thus afford the principal substance necessary for the nutrition of vegetables. In what other manner indeed can we explain the deep green color and great luxuriance of the leaves and every part of the plants, which can be obtained in no other kind of soil, according to the opinion of men well qualified to judge? It exercises likewise a favorable influence by decomposing and absorbing the matters absorbed [query, excreted] by the roots, so as to keep the soil free from the putrefying substances which are often the cause of the death of the *spongiola*. Its porosity as well as the power which it possesses, of absorbing water with rapidity, and after its saturation, of allowing all other water to sink through it, are causes also of its favorable effects. These experiments show what a close affinity the component parts of charcoal have to all plants, for every experiment was crowned with success, although plants belonging to a great many different families were subjected to trial." *Buchner's Repertorium*, ii Reihe, xix Bd. S. 38.)

[The foregoing article is part of Professor Webster's Appendix to his late edition of Liebig's "Organic Chemistry." The results stated show

\* See an account of these experiments in London's *Gardener's Magazine*, for March, 1841.

\* The cuttings of several of these plants being full of moisture, require to be partially dried before they are placed in the soil, and are with difficulty made to strike root in the usual method. The charcoal is probably useful from its absorbing and antiseptic power. The *Hakea* is extremely difficult to propagate from cuttings. All the *Laurus* tribe are obstinate, some of them have not rooted under three years from the time of planting.—W.

clearly that carbon must be furnished to plants, (in carbonic acid,) and in large proportion through the roots, as well as through the leaves of plants; and, as clearly, that Liebig is wrong in supposing the former mode of supply to be so very small, and furnished almost entirely in the early growth, or before the leaves are developed, and enabled to draw the supply of carbon from the atmosphere. —Ed. F. R.]

#### THE BEE-MOTH.

From the Farmers' Cabinet.

Mr. Editor,—It would appear that "Bee-breeding" is to share a large portion of the attention of the community the next year. It is a deserving object, and might be made both profitable and agreeable, in proper situations and under careful management; but neither will that or any other pursuit succeed, unless it be well attended to and made a regular business. Already there are numerous contrivances to stop the ravages of the bee-moth, but to me, in this, as in most other cases, it seems by far better to *prevent* the evil by keeping the bees strong and healthy; and it is only a part of the system which I have laid down for myself, to consider the moth the *effect*, rather than the *cause* of the destruction complained of. I believe that the moth has no desire to deposit its eggs in a hive, until it knows by instinct that the swarm is unhealthy; by the putridity which is then engendered, it is taught that its services will soon be required, according to that beautiful theory so well set forth by Agricola, "wherever animal or vegetable substances are in the progress of decay, moths are found ever ready to convert dead matter into food for living things."

And this is no new idea; I knew, many years ago, a person who kept from 20 to 30 hives of bees with uniform success, but he was peculiarly attentive to the moths, and when he saw them flitting around the entrance of any particular hive, he knew that the bees were sickly, and he would immediately remove them to a clean hive, by turning the box which contained them, placing upon it an empty hive; and by giving the lower box a few gentle blows, the bees would ascend and take possession: this was done in the evening, after the bees had returned from their labors, and the next day they would be found busily employed on their new premises, without any fear of the moth. Now it is all very pretty—these ingenious contrivances to deceive the moths by furnishing them with large and convenient entrances to sham boxes, brushed over with honey or wax, while the bees are restricted to one small and inconvenient hole of entrance—but I do not consider that nature is so imperfect as to be so easily bamboozled; I believe the moths know full as well as the man, when they are *inside* the hive, and that they will not be induced to deposit their eggs in an out-house where there is no food for their young when they come into existence. I beg therefore to repeat, I consider the moth the *effect* and not the *cause* of the mischief; the sickness of the bees and the putridity of the inter-

nal atmosphere of the hive being the true cause teaching them that the labors of their progeny will soon be required to act the part of the turkey-buzzard. Remove the cause, therefore, and the effect will cease—depending upon it, that "when the constitution is in a healthy state, there is little liability to infection of any kind."

Let, then, all those who enter the race of bee-breeding be attentive to this, and by shifting the swarms to other boxes so soon as they perceive them attacked by the moth, they will, I am persuaded, find that prevention is much easier than cure. With me, there is no doubt, the *cause of sickness* often arises from the system of withdrawing the honey by means of boxes and glasses placed on the top of the hive reducing the bees to the necessity of ever breeding in the same cells, by which they become filthy and putrid; I therefore much prefer to add another box below, on removing one from above, according to the plan proposed in that interesting little work, "Bee-breeding in the West," which is quite a *manual of the art*. In Weeks' late work on the same subject, the evil here pointed out is admitted to its full extent, but, strange to say, it is proposed to be remedied only by transferring the bees to another hive; it is said, "when bees have occupied one tenement for several years, the comb becomes thick and filthy by being filled up with the old bread and cocoons made by young bees when transformed from a larva to the perfect fly; and are so contracted that the bees come forth but mere dwarfs, and cease to swarm;" and yet, by the use of the Vermont hive, they are compelled to breed in the same cells continually. It would appear, therefore, that these patent palaces are constructed on false principles.

VIR.

#### "AGRICULTURAL STATISTICS" CORRECTED.

For the Farmer's Register.

An article with the caption "*Agricultural statistics furnished in connexion with the late census of the United States*," having been published over the signature of X. in the July number of the Farmers' Register, which is calculated to make false impressions, relative to the statistical information obtained in connexion with the late enumeration of the people of the United States, it is deemed proper to reply and inform the public, through the same medium chosen by X., that the extracts from the agricultural statistics, which were sent to the senate on the 24th February last, by the secretary of state, were intended as mere samples of the unexamined and uncorrected returns of the marshals, and are published as such only. See Senate Document 219. Those returns, owing, it is presumed, to the short time allowed the marshals to make up their aggregates, have been found to abound with errors, all of which are undergoing the process of examination and correction at this time, in the proper department of the government.

In the attempt to mislead the public, X. has either himself made an egregious blunder, or falsified a public document. It will be perceived by referring to his article, page 437 July number, Farmers' Register, in the paragraph relative to tobacco, he there states that Tennessee produce

96,542,448 pounds, and Virginia only 14,157,841 pounds, or about 11,000 hogsheads of tobacco. Turn to the senate document, page 10, and you will find the number of pounds of tobacco returned from Virginia 74,157,841 pounds according to the marshals' returns; but an error of upwards of 3,000,000 lbs. omitted has been detected, which have to be added to the marshals' numbers.

Having made an error to the extent of 60,000,000, X. then proceeds to base his calculations upon the remaining 14,000,000. The fact is the 58,000 hogsheads inspected in Virginia in 1840 corresponds with sufficient accuracy, to the 77,000,000 pounds returned by the assistant marshals. The corrected returns show 77,187,845 lbs. which on an average of 1300 lbs. to the hoghead are exclusive of York county from which no returns had been received, equal to 59,375 hhd. 345 lbs. In the senate document no additions were made because of the inability at that time to include North Carolina, Kentucky, Michigan, and the Territories.

X. has attempted to show his skill in figures and as a statistical writer, and very properly commences with simple addition. He takes the column of "pounds of tobacco gathered" and gives as the sum total of his labors, 78,070,803 pounds. Be pleased, Mr. Editor, to run over the addition yourself, and see whether our addition or that of X. be correct. We assert that the total should be 138,070,806 pounds, and as we differ 60,000,000, it may be worth your while to see who is right. We enclose you a copy of the document for the purpose.

If after this specimen of the fitness of X. to make statistical calculations for the public eye, he be still desirous of enlightening his countrymen upon the subject of tobacco, we will inform him, that in addition to the 138,070,806 pounds reported in Sen. Doc. 219, Kentucky has returned 53,998,090 lbs. Michigan 1,602 pounds and North Carolina 16,773,359 pounds. In the returns from Virginia an error has been detected of 3,030,004 pounds, which amount is to be placed to the credit of Virginia, making a total of 211,873,861 pounds of tobacco returned by the assistant marshals.

Notwithstanding that in the Senate Document, a note was appended, see pages 11 and 12, to the effect, that, "some of the marshals have returned pounds of ginned cotton, others in the seed, and that in the printed document the discrimination will be made," X. has thought proper to assume that the 10,767,451 lbs. of cotton are equal to 30,000 bales, or more than double her (Virginia's) actual product.

As soon as it was ascertained at the department of state that the marshals had returned cotton differently, some as ginned cotton, and others in the seed, a circular was addressed to the respective marshals in the cotton growing states, calling for information upon the subject. The result has been, that the cotton returned from Virginia in the seed, upon being reduced to ginned cotton is equivalent to 3,504,795 lbs. and from North Carolina to 14,841,783 lbs. the sum of which divided by 400 for each bale will give 45,866 bales the product of Virginia and North Carolina. It is unnecessary to follow the gentleman through the remainder of his cotton statistics, as they will only prove to be bags of wind instead of bales of cotton, he having estimated 400 lbs. of seed cotton, equally with ginned cotton to the bale—a thing unheard of before.

Upon examining the returns of Pennsylvania and comparing the marshal's with the assistant schedules, it was discovered that the marshal had set down by mistake the quantity of sugar in the adjoining column of cocoons. This has been corrected and the quantity of silk cocoons reported by the assistants is found to be 7262½ lbs. for east and west Pennsylvania. The astonishment of X. is expressed, at what he deems the incredible amount of hay produced, aggregate 9,641,225 tons. He asks is this probable? or possible? The truth is, 10 millions is far below the amount produced in the United States. If the amount did not exceed 10 millions of tons how should we be able to feed our 40 millions of domestic animals, horses, neat cattle and sheep? The 4 millions of horses consume more than half the amount, and we can inform X. if he be not aware of the fact, that a different winter provision is made for the cattle of the states he has quoted, than is provided in the pine lands of Eastern Virginia or North Carolina.

It is a matter of sufficient notoriety that besides supporting their own animals through their long winters, large quantities of pressed hay are shipped annually from the eastern states to the southern ports. The wonder of this extraordinary commentator upon what he deems an extraordinary document is greatly increased upon finding sugar reported among the products of New York, and he comes to the sage conclusion that they are pounds of sugar "on paper." Is this writer on the statistics of his country to be informed, and learn for the first time, that such a tree as the sugar maple exists, and that vast supplies of sugar are obtained from that source in the mountain regions of his own state? Well, sir, we can tell him that Virginia produced in 1839, according to the returns of the marshals, 1,530,541 lbs. of maple sugar, an amount which may be almost indefinitely increased if Virginia chooses to put forth her energies. If New York should have availed herself of that gift of Providence to the extent of 10 millions, it is only a reproach to our people, that they have not been equally industrious, possessing the same means and facilities.

When the extracts from the agricultural statistics were sent to the senate, a note explained at the foot of the tabular statement, why North Carolina was not included; see note, page 8, "the aggregate not yet made." In other words the marshal had not summed up the total of the counties in his district, and time was not allowed to do it in the department. This affords grounds for a sneer that, "Louisiana is the only state in the table which produces any considerable quantity of pitch, tar, turpentine and rosin, say 12,233 barrels. We presume," says X., "they are produced from some other tree than the pine;" and with this fact (the omission of North Carolina) before his eyes, he ventures to give the "Total of the United States, 31,689 barrels."

Do twenty-three states constitute the union, Mr. X.? And if so, when did North Carolina cease to be one of the number? The fact is, upon summing up the returns of North Carolina, we find reported 593,451 barrels of tar, pitch, turpentine and rosin. Nearly twenty times the amount assumed by X., for his total of the United States.

X. having thus noticed what he is pleased to term our "most egregious errors," he is pleased



to close his remarks with a summary of the other principal products, and "leaves the reader to judge of their accuracy," with the observation, that "some of them are not over-estimated." We have followed this writer so far, exposing his blunders and proving his ignorance, with all due patience; but the last of his remarks, with its affectation of knowledge, we confess is unbearable. How does X. know, or how is it possible for him to know, whether the returns of the assistants to the marshals be over-estimated? The fact is, there is no estimation about it. The numbers were obtained from the heads of families throughout the union, in answer to the interrogatories put by the assistant marshals, and are only so far erroneous, as they may have misstated ignorantly, or falsified their business, in answer to the questions so put.

It was a novel attempt in this country to obtain statistical information on an extended scale, and it is with deep regret we are compelled to say, that but for the opposition of evil-disposed men, who controlled a portion of the public press at the time, the work would have been much more perfect. There can be little doubt, from the tone of X., that he was one of those who himself set an example of contumacy, and advised others not to submit to the perquisition of the government of the United States, who bade the laws defiance, and, of course, he has the best right to find fault, if they were not executed to please him.

In giving an opinion of the statistics as obtained under the 13th section of the act of 1839, it will not be pretended that the work is perfect; but we will say, that notwithstanding the errors of omission, from individuals refusing to answer, and the misconceptions which have sometimes taken place, that when the work is published at large, it will excite surprise and attention, both at home and abroad, and upon the whole present a gratifying result. W.

[To save time, we have submitted the foregoing letter of correction to our correspondent, X., and present his rejoinder in connexion, as it will appear below.—ED. F. R.]

#### REJOINDER.

For the Farmers' Register.

X. denies that he intended to *make* false impressions. On the contrary, his object was to *prevent their being made*, by the statement which took the rounds of the newspapers, as emanating from an official source, and which is now admitted by W. to be crude, imperfect and erroneous, "a mere sample," and a very bad one, which ought not to have been published. The public prints, adopting without reflection the false premises of the statement, have made comments which are calculated to mislead; and even that erudite work, "the North American Review," has adopted, as correct, the Louisiana return of 249 millions pounds of sugar, which is about treble the quantity produced in the most favorable year, and more than quadruple the average annual product. The reviewer may well say "it will excite universal surprise." W. passes over this error without remark, and fixes on the 10 millions 'maple sugar in the New York return, to found his charge of

ignorance against X., who still believes this to be an exaggeration. Those who are acquainted with the process of making maple sugar, who know the period of time during which the sap can be obtained, and the quantity which a hand can collect and boil down, may calculate the number of persons it requires to produce 10 millions of pounds.

X. was actuated by no illiberal or improper motives in making his strictures, and he not only furnished to the marshal a correct return, but endeavored to have them furnished by others. He had never seen the Senate Document, and did not know of its publication. He based his remarks on the tables which were exclusively published in the newspapers, *additions and all*. He did not falsify them, and the blunders are not of his making. This item of tobacco is precisely as he stated it and the addition of 78,070,806 as *printed in the tables is correct*. The line for Virginia is 14,167,841 and he is not responsible for the error in it of 60 millions, as there was nothing to indicate such error when the *items* and the *sum total* corresponded. W. admits that an error of 3 millions has since been discovered. The omissions of returns from several states was specially noticed by X., particularly in regard to the tobacco and hemp of Kentucky, and the naval stores of North Carolina. So that here was no intention to mislead; and as to the product of naval stores in Louisiana, W. does not and probably cannot assert that it is correct, and he is silent on the subject of hemp and flax, conscious no doubt of the magnitude of the errors, 843,000 tons exclusive of Kentucky! More glaring than even the 281 millions pounds of sugar. The produce of the whole globe is estimated at 18,080,000 cwt.

It is admitted by W. that there was an error in the returns of silk cocoons in Pennsylvania, instead of 238,939 pounds it is 7262! Who falsified the document in this item? X. did not charge falsification, but error.

The indiscriminate returns of ginned and seed cotton were mentioned by X., and the inutility of such returns pointed out by showing to what erroneous deductions they might lead. As the marshals returns "were found to abound in errors," the publication of them without correction is the less justifiable; but the present incumbents are not responsible for the blunders of their predecessors, and instead of undertaking to defend, they would have acted more wisely to have cautioned the public against them, with a promise to correct them.

X. is charged with "ignorance and blunders," and asked "how it is possible he should know whether the returns of the assistant marshals be over estimated." He replies by referring to the returns of hemp and flax, sugar and silk, the over-estimates of which are too obvious to be mistaken.

Thus it appears that the errors as exhibited to the public were not of X.'s making, and if his remarks have caused more attention to be paid towards rendering the tables accurate, he does not regret having made them, and he can bear the sneers of W. without mortification.

P. S. The July number of Farmers' Magazine, published in London, contains the "Agricultural statistics of the United States compiled from the

returns of the marshes" and the product of tobacco in Virginia is there put down at 14,157,841 pounds. How came the London editor to falsify the document? The extravagant returns of hemp, sugar, silk, &c. are thus already circulated in Europe. Does W. need stronger proof of the impropriety of the crude and incorrect publication of the "mere samples," and is it not calculated to mislead, as charged by X?

#### THE TARE CULTURE.

From the Farmers' Cabinet.

At a late meeting of the Philadelphia Agricultural Society, a member inquired if any one present could speak experimentally on the culture and value of the tare or vetch, which is in such very general use in England, where the summer-soiling system is adopted; remarking, that from all accounts the plant must be astonishingly productive as well as nutritious. Having myself employed it for that purpose very largely, and for many years, I would say, its productiveness has never yet been overrated, or its value overrated, as food for all kinds of cattle. Horses, milk cows, fatting beasts, sheep and hogs, will grow fat while feeding on it, and the older it grows the more valuable it becomes, as the seed when formed in the pod, is far superior to oats or any other grain for the purpose of cattle feed; the seeds are black, and the size of very small peas. The crop is used for soiling, by cutting while green and taking it to the stables; it is sometimes fed off by sheep, confining them on it by means of temporary fencing or hurdles; cattle are not liable to become hozen while feeding it in any stage of its growth; on good land it has been known to reach the height of three feet and even more, producing as much as 12 tons of green food per acre, which, when well dried, will yield 3 tons of the most valuable hay on the farm. The first sowing takes place as soon after harvest as possible in England, upon land designed for the wheat-crop the next autumn, with the *winter* variety of seed, which can easily be distinguished from the *summer* tare, as it is smaller, rounder, and blacker; these will bear the severity of the winter; rye is often mixed, to enable the crop to stand up, when it attains a considerable height, but a sprinkling of wheat has been found best for this purpose, as it remains longer succulent in the summer. The crop from this sowing will be fit for cutting for soiling in May, and the stalks, if left in the ground, will afford a second growth for sheep feed; but as the tare is a fallow crop it is the best management to cut all off and plough the land deep as soon as the crop is removed, well working and cleaning it during the summer, preparatory to wheat-sowing early in the autumn, after a dressing of well-prepared compost, if this has not been given to the tares—a far better arrangement for both crops. The next sowing is with the *summer* variety of the tare, as early in March as the season will admit, on land that has been ploughed preparatory in the autumn or winter; again in April another crop is sown, and if necessary, two other sowings might take place, the last so late as the end of June, that so a succession of this most valuable crop might be

secured for the whole of the summer, and until the end of September.

Such crops produce immense quantities of manure, which is carried from the sheds and *composted* for dressing others; turnips, for instance, which may be sown on the land from which the first crop of tares has been carried, and fed off in time for wheat-sowing in the autumn. It must not be forgotten, that the richer the land, the greater will be the crop of tares, and none will pay so amply for manure; but when the crop is very heavy, there is less chance of obtaining good seed, and if that be the object, it is recommended to mow the first crop early for soiling, and permit the second growth to stand for seed, which is sometimes a precarious business, nothing being more uncertain; I have purchased seed at a guinea and a half a bushel, and sold the next year's produce, obtained from it, at six shillings a bushel! When the price of seed is moderate, the quantity sown is two bushels or two and a half per acre, but whatever the price may be, it will be repaid in the crop, if the land be in good heart. As much as 30 bushels of seed per acre has been obtained, but 15 bushels, and often half that, is more common. Under a heavy crop of tares, the land will be found perfectly clean and mellow, and will turn up like an ash-heap: and there is no question with me, that the crop may be raised with success in this country, if well cultivated on good land, rather stiff in its nature, and lying cool.

With regard to the value of the tare for soiling, it has been calculated that ten times the stock might be kept on them than on any other commonly cultivated crop; horses require no corn or any other food, and cows give more butter while feeding on them than on any other food whatever. Is it not strange, that no regular experiment on an extensive scale has yet been made on such an invaluable crop in this country? D.

#### HENRICO AGRICULTURAL AND HORTICULTURAL SOCIETY.

From the Richmond Whig.

The next exhibition of this society will commence on the 20th day of October next, with stock, agricultural implements, &c., and be continued from day to day until completed.

*The farmers of the state*, and all others who take an interest in the cause, are respectfully invited to attend. The arrangements of the society, with its advantageous location, justify us in expressing our confidence, that the exhibition and fair will amply repay a trip to Richmond from any part of the state.

The following premiums will be awarded:

No. 1. For the best stallion, for harness, the saddle, or draught (the premium not having been awarded at the spring exhibition) \$15 00

*Committee*—Gen'l. Bernard Peyton, Richard B. Haxall and Charles Marx.

No. 2. For the most highly improved and best cultivated farm, a premium of \$25.

For the second best \$20.

For the third best \$15.

For the fourth best \$10.

Reference being had to the means (as well

pecuniary as others) of the proprietor for improvement; the amount of labor employed upon it; the means resulting from the vicinity of the farm to the city, &c. The object being to place the industrious cultivator, with limited resources, and no other labor than his own, upon the same footing as the largest cultivator with ample resources. It is to be distinctly understood, that not only the actual fertility of the soil will be considered, but special attention shall be paid to the means which are in actual operation for enriching the farms; to the condition of the enclosures; to the mode of cultivation, whether conducted with neatness, system and economy; to the condition of the stock, and, especially, whether provision has been made for their comfortable accommodation in bad weather. The buildings also, farming utensils, garden, and every thing connected with the comfort and prosperity of the establishment will come under review of this committee.

*Committee*—Wm. H. Richardson, Richard G. Haden and Francis Staples.

No. 2. For the best garden, not less than two acres \$15.

For the second best \$10.

*Committee*—John Carter, Richard Hill, jr. and Joseph Sinton.

No. 4. For the best field of corn, not less than five acres \$15.

For the second best \$12.

For the third best \$10.

For the fourth best \$8.

*Committee*—Major Ed. Christian, Edwid Hill and Wm. A. Gay.

No. 5. For the best field of tobacco, not less than one acre \$10.

*Committee*—John C. Hobson, Frederick Bransford and Wm. Anderson, Jr.

No. 6. For the best crop of turnips, not less than half an acre \$8.

For the second do. \$6.

For the third do. \$4.

No. 7. For the best crop of beets, carrots or parsnips, not less than half an acre \$8.

For the second best \$6.

For the third best \$4.

No. 8. For the best crop of potatoes, Irish or sweet, not less than half an acre \$6.

For the second best \$5.

No. 9. For the best crop of cabbages, not less than half an acre \$6.

For the second best \$4.

No. 10. For the best crop of pumpkins, not less than one acre \$6.

For the second best \$4.

*Committee*—Ro. Carter Page, Wm. Miller and I. A. Goddin.

Persons who intend to compete for any of the foregoing premiums, except No. 1, will please give notice to the committees appointed to award the premium or premiums for which they will be competitors, by the 15th of September next—after which it will not be practicable to attend to any application.

The foregoing premiums will be awarded on the first day of the meeting, immediately after the annual report of the society, when the several committees are required to hand in their respective reports to the president. The exhibition of stock and agricultural implements will then be made; after which a fair will be held for the sale of such

stock and other articles as may be offered; and it will be continued on the second day, if not concluded on the first. The succeeding portion of the exhibition will be in the city, in the largest room or rooms that can be obtained, when the following premiums will be awarded; after which, a second fair will be held for the sale of such of the articles as may be offered.

No. 1. For the neatest and most substantial counterpane, a premium of \$6.

For the second best \$4.

No. 2. For the neatest and most comfortable mattress, filled with hackled shucks, or cotton, and made at home \$5.

For the second best, \$3.

No. 3. For the best comfort or comfortable, \$6.

For the second best, \$4.

No. 4. For the best bed quilt, \$6.

For the second best, \$4.

No. 5. For the best table cloth, \$6.

For the second best, \$4.

No. 6. For the neatest and most substantial carpet (not less than 10 yards,) \$10.

For the second best, \$5.

No. 7. For the best hearth rug, \$6.

For the second best, \$4.

No. 8. For the best specimen of stockings, socks, gloves, or mittens, of Virginia raised silk, thread, wool or cotton, worsted or mixed, \$7.

For the second best, \$6.

For the third best, \$5.

For the fourth best, \$4.

No. 9. For the best specimen of fruits—apples, pears, &c., \$10.

For the second best, \$5.

No. 10. For the best specimen of dried fruits, not less than half a bushel, \$5.

For the second best, \$3.

No. 11. For the best specimen of preserves, not less than one gallon, \$5.

No. 12. For the best specimen of pickles, not less than one gallon, \$5.

No. 13. For the best specimen of flowers, the production of the exhibitor, \$10.

For the second best, \$5.

Premiums will be given in money or plate, at the discretion of successful competitors.

The society hopes to have the aid of the ladies, to award the thirteen last mentioned premiums.

The committee have thought it expedient to make the premiums large in number, rather than in the amount, to afford the gratification of a premium to as many as possible.

It is to be understood, that all the articles on which the thirteen last premiums are offered, must be the production of the exhibitor.

The mechanics and artisans of the city, and others to whom it may be convenient, are respectfully invited to send to the first day's exhibition, such specimens of their own industry and skill, as they may think proper to have exhibited.

The most ample and particular arrangements will be made for the accommodation of stock, for any number of days that may be necessary, and it is recommended that it be generally on the ground by the evening preceding the first day's exhibition.

The following additional committees are appointed, viz:

To select a place for, and to conduct the first

day's exhibition, the president of the society, Charles T. Botts and Richard Hill, Jr.

To select a place for, and to conduct the succeeding portion of the exhibition, Wm. B. Chittenden, Gustavus A. Myers, Dr. Henry Myers, Thomas A. Rust, Wm. McCrery, and Henry Ludlam.

JESSE H. TURNER,  
THOMAS S. DICKEN,  
RICH. G. HADEN,  
WM. H. RICHARDSON,  
JOSEPH RENNIE,  
WM. D. WREN,  
*Executive Committee.*

#### A SUGGESTION TO AGRICULTURAL SOCIETIES.

For the Farmers' Register.

##### *To the Agricultural Societies of the U. States.*

One who has long deeply felt the importance to human comfort and welfare of the great cause to which you have devoted yourselves, takes the liberty to address you in regard to the best means of promoting it by your associated efforts. If you are all actuated, as he sincerely believes you are, by the true spirit of such institutions, you will at least take in good part the suggestions which I am about to offer, whether you adopt them or not; and you will do me the justice to impute no other motive to me than an earnest desire to contribute my mite towards an object which all who truly love our country have much at heart. That object is, the improvement of American husbandry in all its branches. But I have not the vain presumption even to attempt an enumeration of any of the direct means by which this improvement could be best accomplished. Were I fully capable of making such enumeration, it would lead me too far from my present purpose, which is merely to invite your attention to the serious consideration of a plan by which it seems to me that much greater interest could be given to the meetings of all the agricultural societies throughout the United States.

This plan is, for each society occasionally to invite some member of another society to address them at their annual meetings, and, when such invitation was accepted, to give public notice thereof. Perhaps it would sometimes happen that the stranger's address might not be better than that of the individual who usually addressed them. Still the novelty of the thing would certainly attract a larger number of attendants than ordinary; for we all know, that the disease of "*itching ears*," which prevailed so much in St. Paul's day, is very far from having ceased in our times. Nay, it would seem to be on the increase. Why else do we every where see such crowds of people collect together at any place where it has been announced that a strange preacher from a distant part of the country will hold forth? No one believes that it is either religion or a regard for public worship which draws together the greater portion of the assemblage. It is neither more nor less than to *alleviate the itching of their ears*. Now, I verily believe this ancient disease to be incurable, and therefore most earnestly recommend, (if you will pardon me for the liberty,) that you will endeavor to extract good out of evil.

Apply to this malady the unction of good words from strange lips, and most confident do I feel that you will soon experience the beneficial effects of such treatment.

The circumstance which suggested this plan to my mind was, the recollection of the admirable addresses delivered by the late lamented Judge Buel before the Fulton County Society, the State Agricultural Society of New Jersey, the Agricultural Institute of New London and Windham counties, and the Agricultural and Horticultural Society of New Haven, by each of which he had been invited to address them. The newspapers of the day represented the concourse of people, on all these occasions, as being far greater than it had ever been before. This, beyond doubt, was caused in a great measure by the deservedly high character of that most worthy, talented, and truly patriotic citizen. But I still believe, that even if he had been an entire stranger to the great majority of the attendants, each assemblage would have been greater than at any ordinary annual meeting, when it was known that they would be addressed only by one of their own society.

Generally speaking, the benefits of such addresses, (supposing them to be nearly or quite equal in merit,) will be in proportion to the numbers who hear them. Consequently any fair means to increase these numbers should always be adopted: and more, I think, will be found of greater efficacy than for all our societies to reciprocate such invitations as are here proposed. That they would generally be accepted I cannot doubt, any more than I can doubt that such acceptance would give much additional interest to the meetings of all our agricultural societies, and thus indirectly augment their power to do good. They might not always nor often succeed in procuring a gentleman to address them who was nearly equal to Judge Buel. Indeed, I believe it would be a hard matter, among all our societies, to find his match in all respects. But the search should certainly be continued, unless we decide beforehand that it would be fruitless. Even to be ranked second to such a man would be great praise, and enough to gratify the ambition of any one, who was not inordinately vain of his own qualifications.

Should the editors of our other agricultural papers generally approve of the plan here suggested, their republication of it will much oblige a true

FRIEND TO AMERICAN HUSBANDRY.

Aug. 17th, 1841.

#### A DISCOURSE ON THE CHARACTER, PROPERTIES, AND IMPORTANCE TO MAN, OF THE NATURAL FAMILY OF PLANTS CALLED GRAMINEÆ, OR TRUE GRASSES.

Delivered as a lecture before the class of the Chester County Cabinet of Natural Science, Feb. 19, 1841.

By William Darlington, M. D.

*Gramina ubique terrarum sociatim vigent, lacta præbent pecudibus pascua et humano generi annonam. ENDLICHER, Genera Plantarum.*

The late David Douglas—an enthusiastic votary of *Flora*, and finally a martyr in the cause—was so long engaged in exploring and collecting

the botanical treasures of our western wilds, that he became familiarly known to the red men of the forest, by the cognomen of the "*Man of Grass*."

Although I have but slender pretensions to the significant title conferred by our aboriginal brethren, on the unfortunate Scottish botanist,—I have an idea, nevertheless, that those best acquainted with my vegetable predilections, will be prepared to expect, on this occasion, a discourse on some such humble and terrestrial objects,—rather than a Phaeton-like attempt to imitate my successful colleagues, in traversing the ethereal regions of intellect. They will doubtless conclude, that if it was sound advice to the cobbler, not to venture beyond his *last*,—the culler of *simples* should in like manner profit by the admonition, and confine himself to his plants. I have therefore selected a topic, for the evening, in accordance with these suggestions. Nor do I consider the change in the entertainment—unpalatable though it may be—altogether without its advantages. There is a kind of analogy between the mind and stomach, in relation to their sustenance: and, as the epicure finds it salutary, at times, to substitute bran bread for his habitual dainties,—so the mind, which has been feasting on intellectual delicacies, may peradventure be benefited by an occasional transition to coarser fare. At all events, it may enhance the gratification of a return to its wonted enjoyments.

I propose to attempt a cursory notice of the character, properties, and importance to man, of a single tribe, or family, of the vegetable creation—known to the naturalists by the name of *Gramineæ*, or the *true Grasses*: and while I calculate with some confidence, upon a fellow-feeling among the *botanical* portion of the audience,—I am not without a hope, that—in a district so distinguished for its agricultural advancement—the subject will also be found to possess a degree of *general* interest.

Before entering into particulars, however, it may be useful to make some preliminary explanations,—or, as the politicians say, to "define our position." The term *grass*, in our vernacular tongue, is frequently used in a vague sense—to designate every kind of herbage found in our meadows and pastures; hence, we often hear people speak of *clover*, *lucerne*, and other plants—which have no botanical affinity whatever with the *true grasses*—as though they really belonged to that remarkable tribe of vegetables. But such is not the language of naturalists; and ought not to be, of any well-informed person. An accurate knowledge of objects can neither be acquired, nor communicated, without precision in the use of terms. The distinctive characters of that family of plants, of which we propose to treat, are now well understood, and have been satisfactorily defined.

Whenever we meet with a plant, having a cylindrical, jointed *stem*, with the joints solid, and the intervening portions hollow—or, in a few instances, filled with a pith-like substance—the *leaves* alternate, one originating at each joint, embracing the stem with its base, and forming a sheath which is slit on one side down to its origin—and the *flowers* protected by those peculiar envelopes, known by the name of *chaff*—we may take it for granted that we have before us a *true grass*. Brief and simple as is this definition, it will be found to contain the most obvious charac-

teristics of the tribe; sufficient, it is believed, to distinguish it from all others. While we are on the subject, however, a few additional traits may perhaps be adverted to, with propriety. The *cuticle*, or skin of the grasses (for they have no *bark*, properly so called) contains a considerable portion of *silica*, as is shown by its vitrification, when stacks or other dense masses of unthrashed grain, are burnt. A sort of glass is produced from this silica, which preserves the form of the plant, even to its minutest parts. The *nerves*, or *veins*, in the leaves of this family, are all nearly parallel, in consequence of which, those appendages (i. e. the *leaves*) are entire, generally narrow, elongated, and more or less linear in their form. The *flowers* are mostly small, disposed in little clusters of spikelets, and these spikelets are variously arranged, in spikes, racemes, or loose panicles. Each *spikelet*,—consisting sometimes of one but more commonly of two, three, or many *florets*—is usually embraced, or supported at the base, by two chaffy pieces, called *glumes*; and each *floret* is immediately protected by two somewhat similar chaffy coverings, which for the sake of distinction, are denominated *paleæ*. These chaffy coverings of the flowers and seeds of the grasses, are wholly unlike the delicate and showy floral envelopes of most other plants,—and seem to be, in fact, the mere stunted vestiges of abortive leaves—or rather of their *sheaths*—closely crowded together. Hence we find them, like the leaves, constantly *alternate*: for, although approximated in pairs, they are never exactly opposite—or originating in the same plane—as we see to be the case with the sepals, and petals, of other tribes. The number of *stamens* is usually *three*—rarely *six*, or some multiple of three—and occasionally, from abortion, some intermediate, or smaller number. Each fertile flower produces a *single seed*,\*—the chief bulk of which is called *albumen*, and is that nutritious portion of our cultivated grains, from which the miller prepares *flour*. The *embryo*, or living rudiment of the future plant is comparatively a mere speck, or minute point, in the seeds of the grasses,—snuggly situated, on the outer side, near the base of the albumen; where it lies dormant, until the concurring causes of vegetation (namely, warmth, moisture, and oxygen,) excite it into active life. This embryo—which is, in fact, an entire plant in miniature—may be distinctly and satisfactorily observed in a grain of wheat, or Indian corn; especially at the moment of sprouting, or incipient growth,—when it will be found that the principal mass of the grain consists of the apparently inorganic matter, already mentioned by the name of albumen. It is this large, farinaceous or *mealy* portion, of the seeds of grasses, which renders the *cerealia*, or cultivated grains, so valuable to man—as furnishing the chief material for *bread*. Wherever the *albumen* of seed is found to be

\* The fruit of the grasses, generally, appears to be a simple naked seed, in each fertile floret,—but the seed is, in fact, invested with a pericarp, or covering, as in most other plants. The pericarp in this family however, is thin and membranaceous,—and is usually so completely adherent to the proper coating of the seed, as to be undistinguishable from it. In some species—such as oats, barley, rice, &c.—there is found an *additional envelope*, formed of the *paleæ*, or inner chaff, which closely embraces the fruit.

*mealy*, it is always innocent and nutritious—even when the residue of the plant is poisonous. In some instances, it is replete with oil—as in the poppy tribe; and in the seeds of the coffee plant, the albumen is of a *horny* texture. There are other and large tribes, again,—such as the *leguminous* plants—including our common garden beans, peas, clover, &c.—in which the seeds are wholly destitute of the appendage called albumen;—the miniature plant completely fitting the integuments of the seed, and its chief bulk consisting of two thick, fleshy lobes, called *cotyledons*. These lobes, or cotyledons, are the crude *primary leaves* of the future plant (appropriately called *protophylles*, by the French botanists,)—and doubtless serve, in some degree, as *substitutes* for albumen in supplying nutriment during the first stages of vegetation.

Having thus hastily glanced at some of the more striking features of the extensive tribe, technically denominated *grasses*—and the characters by which they are distinguished from other plants—I flatter myself we shall have no difficulty in recognizing any number of that family which may hereafter come in our way. It will be no news, indeed, to any of us, to be told that “red-top,” “timothy,” and “fox-tail,” are *grasses*; and we all, perhaps, may be aware, that our cultivated oats, barley, wheat and rye—and even rice—belong to the same category: but the fact may not be equally familiar to every one, that our Indian corn, and broom corn—the sugar cane, and the bamboo—are also *true and genuine grasses*. Much as these last-mentioned plants may seem to differ from the multitude of common grasses, the disciplined eye of the botanist perceives at a glance, that they all belong to the same family: and indeed, so eminently *natural* is the whole tribe—i. e., so strong is the general resemblance in the characters and habits of its members—that superficial observers, finding it so much easier to adopt, than to verify the crude notions of the vulgar, have actually supposed several species to be continually, and reciprocally, changing into each other!\* It is to be hoped, however, that

\* It is a curious circumstance, in the history of this vulgar error, that, in former times, when the occult sciences flourished, the peasantry of Europe imagined all our cultivated small grains to be subject to this kind of transmutation:—that wheat was often changed, first into rye, then into barley, from barley to ray grass, or lolium, from lolium to bromus, or cheat, and finally, from bromus to oats! They supposed, moreover, that by the agency of a fertile soil, the degenerate grass could be gradually restored to its original form; or, at least, that it could be brought back as far as rye!—“*Veteres credebant frumentum per gradus degenerare in macriori terra, atque triticum in secale, secale in hordeum, hordeum in bromum, bromum in avenam et sic per gradus descendere, immo credebant etiam semina bromi vel hordei in fertiliori terra producere secale.*”—*Caroli a Linnæ, Amantissimæ Academicæ, lom. 5.* Even in our own enlightened age and country, as we are wont to phrase it—there are yet many persons strongly tinctorum with the notion, that wheat is frequently transmuted into *bromus*, or cheat;—though I have not met with any so full in the faith, as to believe they can bring the degenerate offspring back again to its pristine state. It is remarkable, also, that this obsolete notion—so entirely exploded among scientific naturalists—has lately found an advocate in a gentleman of some pretensions, as a geolo-

our ingenuous youths will yet learn to discriminate between truth and error, in the objects around them; and not be content—as a popular writer expresses it—“to wander among the productions of nature with little more perception, or enjoyment of her charms, than a cow on a common, or a goose on a green.” In this hope, and under this impression it was, that I thought a rapid sketch of so important a tribe of the vegetable creation might be found in some degree interesting.

The whole number of flowering plants, already known to the botanists, has been estimated at about *forty thousand species*,—of which it is supposed the *grasses* constitute *one twentieth* part: but if we take into the account, the immense number of *individuals* of many species, the *proportion* of grasses to vegetation in general will be greatly increased. The known grasses of *Chester county*—native, naturalized, and cultivated—amount to about *one hundred species*, or *one-tenth* of the whole number of flowering plants, inhabiting the same district. A large portion, indeed, of this vast family, is not known to possess any properties which man has yet been able to convert to his own immediate advantage: But it becomes us to be cautious how we decide upon the value of objects, from the imperfect views of their *utility*, afforded by our limited knowledge. Many created beings, which appear to us as nuisances, may be important agents for good, in the general economy of nature. The most worthless grasses—or the veriest *weeds* that annoy the husbandman—may be the instruments of a wise Providence, for collecting fertilizing principles from every falling shower, or passing breeze,—and imparting them, in turn, to the soil on which they are finally decomposed. These silent and imperceptible processes may doubtless be extended, and their benefits enhanced, by human ingenuity and co-operation; but their spontaneous occurrence, in the great laboratory of nature, can scarcely elude the notice of the scientific observer.

With respect to *locality*, or peculiar places of growth, affected by this numerous tribe, there is but little to remark.\* We find grasses growing on dry land, and in water; but none that are properly *marine* plants. They occur in every kind of soil; both in society with others, and alone; sometimes occupying considerable districts, to the almost entire exclusion of other forms of vegetation, and thus forming the beautiful *turf*, so much admired in lawns, and meadows. *Sand* appears to be less favorable to their growth; but even

gist,—and who has, more recently, acquired considerable notoriety, by his researches concerning *territorial limits*: I mean Mr. *Featherstonehaugh*. As that gentleman has been so astute in detecting the mutability of the *laws of nature*,—we ought not, perhaps, to be surprised at his discovery of the extraordinary *mutation* in our *north-eastern boundary*, since it was established by the fathers of the republic! It is quite as likely that landmarks should change their locality, as that objects of natural history should lose the distinctive characters impressed on them by the hand of the Creator.

\* A number of the facts and observations concerning the *gramineæ*, here presented, may be found in Prof. Lindley's *Natural System of Botany*,—a most valuable and interesting work, to the student of that science.

this produces species which seem almost peculiar to itself.

The *diffusion* of this family has almost no other limits than those of the whole vegetable kingdom. Grasses occur under the equator; and are among the few plants to be met with in the frozen regions of Spitzbergen. On the mountains of the south of Europe, and on the Andes, in our own hemisphere, they ascend almost to the line of perpetual snow.

The most striking differences between tropical and extra-tropical grasses are the following:

1. The *tropical grasses* acquire a much greater height, and occasionally assume the appearance of trees. Some species of *bamboo*, are from 50 to 60 feet high.

2. The *leaves* of the tropical grasses are broader, and approach more in form to those of other families of plants.

3. The *flowers*, in tropical grasses, are more frequently imperfect, or declinuous,—i. e. the stamens and pistils are oftener found in distinct and separate envelopes: they are also usually softer, more downy, and elegant,—as may be seen in the sugar cane, and others.

4. The *extra-tropical grasses*, on the other hand, far surpass the tropical in respect of the number of individuals. That compact grassy turf, which, especially in the colder parts of the temperate zones, in spring and summer, composes the green meadows and pastures, is almost entirely wanting in the torrid zone. The grasses there, do not grow crowded together,—but, like other plants, more dispersed. Even in the south of Europe, they are less gregarious,—and meadows are seldom to be seen than in the north.

As to the distribution of *individuals*, the generality of species are social plants. The distribution of the *cultivated grasses* is determined not merely by climate,—but depends partly on the civilization, industry, and traffic of the people—and often on historical events. Within the northern polar circle, agriculture is found only in a few places. In Siberia, grain reaches at the utmost only to 60 degrees—in the eastern parts scarcely above 55—and in Kamchatka there is no agriculture, even in the most southern parts, lat. 51 degrees. The polar limit of agriculture on the northwest coast of America, appears to be somewhat higher; for in the more southern Russian possessions (57 to 52 degrees,) barley and rye come to maturity. On the east coast of America, it is scarcely above 50 to 52 degrees. Only in Europe—namely, in Lapland—does the polar limit reach an unusually high latitude, viz: 70 degrees. Beyond this, dried fish, and here and there potatoes, supply the place of grain. The grains which extend farthest to the north in Europe, are barley and oats. These, which in the milder climates are not much used for bread, afford to the inhabitants of the northern parts of Norway and Sweden, of a part of Siberia and Scotland, their chief vegetable nourishment. Rye is the next which becomes associated with these. This is the prevailing grain in a great part of the northern temperate zone; namely, in the south of Sweden and Norway, Denmark, and in all the lands bordering on the Baltic, in the north of Germany, and part of Siberia. In the zone where rye prevails, wheat is generally to be found,—barley being here chiefly cultivated for the ma-

nufacture of beer, and oats supplying food for the horses. To these there follows a zone in Europe and western Asia, where rye disappears, and wheat almost exclusively furnishes bread. The middle, or the South of France, England, a part of Scotland, a part of Germany, Hungary, the Crimea and Caucasus, as also the lands of middle Asia, where agriculture is followed, belong to this zone. Here the vine is also found; wine supplants the use of beer, in many places; and barley is consequently less raised. Next comes a district where wheat still abounds, but no longer exclusively furnishes bread,—rice and maize becoming frequent. To this zone belong Portugal, Spain, part of France, on the Mediterranean, Italy and Greece; also the countries of the East, Persia, northern India, Arabia, Egypt, Nubia, Barbary, and the Canary Islands: in these latter countries, however, the culture of maize or rice, towards the south, is always more considerable; and in some of them, several kinds of *Sorghum* (kindred species of our broom corn), and *poa Abyssinica* (a plant related to our meadow grass)—come to be added. In both these regions of wheat, rye only occurs at a considerable elevation; oats still more seldom, until at last they entirely disappear,—barley affording food for horses and mules. In the eastern parts of the temperate zone of the old continent, in China and Japan, our northern kinds of grain are very unfrequent,—and rice is found to predominate. The cause of this difference between the east and the west of the old continent, appears to be in the manners and peculiarities of the people. In North America, wheat and rye grow as in Europe,—maize is more reared in the western than in the old continent, and rice predominates in some of the southern districts of the United States. Within the torrid zone, maize predominates in America—rice in Asia—and both those grains in nearly equal quantity in Africa. The cause of this distribution is, without doubt, historical: for Asia is the native country of rice, and America of maize.

In some situations—especially in the neighborhood of the tropics—wheat is also met with, but always subordinate to these other kinds of grain: In the high lands of South America, there is a distribution similar to that of degrees of latitude. Maize, indeed, grows at the height of 7200 feet above the level of the sea, but only predominates between 3000 and 6000 feet of elevation. Below 3000 feet it is associated with other vegetables peculiarly tropical; while from 6000 to 9260 feet, the European grains abound,—wheat in the lower regions—and rye and barley in the higher.

To the south of the tropic of Capricorn, wherever agriculture is practised, considerable resemblance with the northern temperate zone may be observed. In the southern parts of Brazil, in Buenos Ayres, in Chile, at the Cape of Good Hope, and in the temperate zone of New Holland, wheat predominates; barley, however, and rye, make their appearance in the southernmost parts of these countries, and in Van Dieman's Land.—In New Zealand the culture of wheat is said to have been tried with success: but the inhabitants avail themselves of a species of *fern* [*Acrostichum furcatum*] as the main article of sustenance. Hence it appears, that, in respect of the predominating kinds of grain, the earth may be divided



into five grand divisions, or kingdoms: the kingdom of *rice*—of *maize*—of *wheat*—of *rye*,—and lastly of *barley* and *oats*. The first three are the most extensive; the maize has the greatest range of temperature; but rice may be said to support the greatest number of the human race.\*

With reference to the *properties*, and *uses*, of this comparatively humble tribe of plants, it may be observed, that it probably contributes—directly and indirectly—more largely to the sustenance and comfort of the human family, than any, if not all, of the other groups of the vegetable creation. Those numerous species which are regarded as mere weeds,—which even the browsing herds neglect, and trample under foot,—may yet, as has been intimated, be operative, in gradually fertilizing the soil. Some have been found of great value, simply in fixing and keeping together the blowing sands of the sea-coast, by their creeping suckers and tough entangled roots. Among these, the *Arundo arenaria*, L., and the *Cynodon dactylon*, Pers., are the most remarkable. The roots of the latter are also employed in India, in the preparation of a popular beverage. The culms or stems of the grasses, have been put in requisition for various economical, and even ornamental purposes. The *arundo*, just mentioned, is extensively used in the Hebrides, for making ropes, mats, bags, &c. The branches of the panicke, at the summit of our cultivated broom corn (*Sorghum saccharatum*, Pers.) furnish a large supply—as every one knows—of those convenient implements, called besoms, and brushes. The culms of *rye* afford a good material for roofing, and are much employed, by the farmers in Lancaster and some other counties of this state, in thatching their barns. The Chinese manufacture a delicate paper from the rice plant; and in our own country, a coarse but very useful paper is made from oat straw—and even from the husks of Indian corn. In the country of the bamboo, (*Bambusa arundinacea*, Willd.) the culms of that stately grass furnish spars for the equipment of sail-boats, and walking canes for the aid of pedestrians; while some of its slender congeners afford rods, for our anglers, which honest Izaak Walton himself might have envied. Large quantities of paper, also, are made in China from the bamboo. Some of the reeds of Brazil are described as living fountains: they grow from 30 to 40 feet high, with a diameter of six inches, form impenetrable thickets, and are exceedingly grateful to hunters; for on cutting off such a reed below the joint, the stem of the younger shoots is found to be full of a cool pleasant liquid, which immediately quenches the most burning thirst. The fashionable world, moreover, is indebted to the gramineous tribe, for some favorite articles of dress. The well-known head-dresses, from *leghorn*—so highly prized by the ladies—are manufactured from the straw of a delicate variety of wheat; and in our own country, many beautiful imitations of *leghorn* hats and bonnets have been made from the slender culms of the grasses,—particularly the meadow, or green grass [*Poa pratensis*, L.] In the days of our grandmothers, too, this family of plants contributed to the decoration of the rustic fair: for even in those unsophisticated times, decorative appendages were not entirely eschewed.

\* Schouw, in Lindley—ubi supra.

An humble substitute for necklaces of coral, and pearl, was found in the fruit of an oriental grass, often seen in the gardens, whose hard and polished involucre are known by the name of *Job's tears* [*Coix lachryma*, L.] But it is not only the means of adorning the person, that are to be derived from this source. The fistular stem, or culm of the grasses—especially of the oat-plant—appears to have furnished the shepherds of antiquity with the material for an instrument of music!—as, in *Virgil's* first pastoral, we find one of these swains reclining under the shade of a spreading beech, wooing his rustic muse, and wakening the sylvan echoes, with a slender *oaten pipe*,—or, to adopt the language in which he is accosted by *Melibæus*,—

“Silvestrem tenui musam meditaris avena.”

In an agricultural point of view, the superior value of the grasses as materials for pasture and hay, is owing to the large quantity of saccharine matter with which they abound, about the time of flowering; and which is the source of that rich, sweet odor, observable in well-preserved hay. This saccharine matter, which pervades the whole plant before flowering, and is most perfectly elaborated at that epoch, is designed to be ultimately concentrated and deposited in the seeds,—chiefly in the form of *farina*; and hence we find the *herbage* of comparatively little value after the fruit is fully matured. The skillful agriculturist, therefore, when he wishes to have good *hay*, cuts his grass at the moment when the nutritious juices are most perfect—and while they are diffused throughout the plant. But when his main object is the *seed*,—as in our cultivated grains,—he of course postpones his harvest until the career of vegetation is finished. It is needless to enlarge on the importance of the *herbage* of the grasses, in supplying the food of our domestic animals—and, indirectly, the animal portion of our own food. I will, however, mention those species which are deemed of chief value in our meadows and pastures,—naming them in what I consider the order of their excellence, 1. The meadow, or green grass, erroneously called “blue grass,” in Kentucky [*Poa pratensis*, L.]—2. Timothy, or the “herd’s grass,” of the northern states (*Phleum pratense*, L.)—3. Orchard grass (*dactylis glomerata*, L.)—4. Meadow fescue [*Festuca pratensis*, L.]—5. Blue grass [*Poa compressa*, L.]—6. Ray grass [*Lolium perenne*, L.]—7. Herd’s grass, of Pennsylvania, often called “red top,”—the “bent grass” of the English [*Agrostis vulgaris*, L.]—And, 8. Sweet-scented vernal grass [*Anthoxanthum odoratum*, L.] There are a few other grasses—native, or partially naturalized—to be found on our farms,—and which are more or less eaten by cattle, when the better ones are wanting: But they are of comparatively little value,—and good farmers are always desirous to supersede them, as soon as possible, by some of those above named. It is remarkable, that all the grasses here enumerated are believed to have been introduced into our country. They are all more or less extensively naturalized; but some of them require to be regularly sown, to insure a full crop,—and are therefore known as *artificial grasses*. Those generally cultivated, here are the timothy, and orchard grass,—and occasionally we see the ray, and herd’s grass, or



red top;—though these last are not so much esteemed. The others are completely naturalized; and when the soil is either originally fertile, or adequately improved, the best of them,—viz. the meadow grass, and the fescue,—soon appear spontaneously in our pastures, and supersede the artificial ones. Now and then we hear of attempts to introduce *new grasses* to the notice of our agriculturists,—accompanied by exaggerated statements of their value;—such as the taller oat-grass (*Avena elatior*, L.)—sometimes called “grass of the Andes”: and a few years since, one of our coarse indigenous grasses, called “sesame”, or “gama grass” (*Tripsacum dactyloides*, L.), was so extravagantly lauded in the journals, that many lovers of novelties were induced to try the experiment of cultivating it, in place of the old approved plants; but, like some other “experiments” that we wot of, in our day, it resulted in a total failure.\* It is, indeed, exceedingly doubtful, whether any other grasses are so well adapted to our climate, and our wants, as those old and long-tried acquaintances of our farmers, which I have already enumerated.

I have thus endeavored to give some idea of the uses to which the roots, stems and general herbage of the grasses are or may be appropriated, in the arts, and in domestic and rural economy. But it is from the *seeds* of the grass tribe—with one exception—that we derive the most eminent and immediate advantages. To them we are indebted for what has been emphatically called the staff of life. The chief bulk of those seeds being made up of *farinaceous matter*, which, as has been stated, is always innocent and nutritious—they are consequently well adapted to the sustenance of man. They not only supply us with *bread*, but with all the countless variety of dishes which ingenuity has prepared, both from the flour and the unground grain; and if but few species are commonly employed for that purpose, it is because the large size of their seeds, compared with those of other grasses, renders them more eligible as objects of culture. There is but a solitary instance alleged of the unwholesomeness of the seeds, in the entire family of the grasses, viz.: those of the darnel (*Lolium temulentum*, L.)—a common weed in many parts of Europe—but scarcely known to the United States: and even in this case, the deleterious effects are probably much exaggerated. It is only when the seeds are damaged, or diseased, that they become injurious to health;—as when putrefaction has commenced—or when that peculiar disease and enlargement of the grain occurs, which is known by the name of *ergot*.\* This kind of diseased

grain (the effect, it is believed, of a parasitic fungus,) has been found to exert a powerful influence on the animal system; and hence, instead of being a nutriment, may become either a *poison* or a *medicine*,—according to the quantity taken, or the manner in which it is employed. Indeed, the remark may be made general,—that the chief distinction between a poison and an active medicine, consists in the size of the dose, and the skill of the doctor. A drug that has no power to do mischief, or to disturb the system, can possess but feeble medicinal virtues; and, if it deserve notice at all, should be classed among the *aliments*, rather than in the *materia medica*. Accordingly, we find the poisonous plants furnishing the multifarious ingredients of the apothecary's shop,—while the simple grasses, in their sound and unobscured condition, yield nothing but the wholesome materials for food and nourishment. It is true, that human ingenuity has extracted a potent medical agent, in the form of *alcohol*, from the fermented seeds and juices of the *gramineae*,—and it is equally true, that man has wickedly converted that *extreme medicine* into his daily beverage: but this is only a signal instance of his depravity, in perverting the blessings bestowed on him,—and argues nothing against the intrinsic value of the material thus abused, it merely illustrates the ancient truth—*corruptio optimi pessima*,—that the prostitution of the best things produces the vilest results.

(To be continued.)

#### THE PEACH—IMPORTANT EXPERIMENT.

From the Albany Cultivator.

*Messrs. Gaylord and Tucker*—In the spring of 1837, I wrote to Judge Buel, asking him to join me in experiments on the peach tree with salt-petre, and proposed to give the result through the medium of the Cultivator to the public. I gave as my reason for that request, that as far as my observations extended, I had always observed that on soils containing nitre and muriate of soda, the peach tree lives luxuriantly to an advanced age, while upon soils immediately adjoining, immature decay takes place, and the tree seldom attains the age of seven years. As instances in vindication of this occur so frequently, I have been astonished to see them passed over without notice, and now advert to some of them to establish the truth of this position. Peach trees growing in the site where once stood a dwelling, generally live to an old age, the soil of which, by analysis, will give a proportion of nitre. The same thing occurs in many districts of the west and south-west; upon one farm the occupant has no difficulty in having good peaches, while his neighbor finds it a laborious task to prolong the life of the tree to a few years, and on well cultivated farms near the seaboard. I have been informed, they have but little difficulty in growing this tree. Having these and other instances for my guidance, I commenced experiments with salt and salt-petre, in the year 1836, upon an orchard six years old; clover was sown upon it that spring, and it remained in grass till last fall, when it was ploughed and sown in wheat and clover this spring. The trees in '36 were

\* We cannot but remark, says the botanical editor of Rees's Cyclopædia, what extraordinary celebrity is attached, every now and then, to one grass or other, and how their fame passes away like the morning cloud, while the best graziers scarcely know, perhaps, better than their fat cattle, any thing of the nature of the common never-failing herbage, to which they are both so much indebted.—*Art. Panicum*.

\* The quality of grain, and of the flour manufactured from it, may be materially injured by incipient vegetation: The process of germination produces a chemical change in the seeds, and renders the farina unfit for culinary purposes: Hence it is impossible for the miller to make good flour from grain that has sprouted.

full of worms; some of the trees were dead, others apparently dying, and but very few put on the appearance of health; such was its distempered condition that some of my friends advised me to cut down about one-half of those that yet showed life, saying that such was the practice of peach growers. I thought it would be a bad practice for a physician to destroy one or more of a family to prevent disease from spreading, and after cutting down those that were dead, I commenced operations on the balance with equal quantities of salt and saltpetre combined, applying about a half a pound upon the surface and in contact with the trunk of the tree; then sowed it broadcast over part of the orchard, at the rate of about two bushels per acre. The result of this application, to the surprise of my friends, was the appearance of perfect health, with new and vigorous shoots, the trees full of fruit, which matured with increased size and improved flavor. Towards the last of March, and again in May and September, 1837, I applied the same ingredients in different proportions without observing much difference in the effect; though I have since thought that where I applied the saltpetre alone, and where the largest portion of the mixture was nitre, the effect was best; but in consequence of the price of saltpetre, I have endeavored to ascertain the smallest quantity that should be used, and I would not advise less than one-eighth, though I should prefer one-fourth or more. My trees this fall (1837) were free from worms, all doing well, and I have found no further use for the axe in the orchard. In the year 1838, I applied the mixture to a part of my orchard in March, the other part received the application in June and September; upon that part done in March, I had an abundance of fruit, while those done in the 6th and 8th months were comparatively destitute of fruit, it having been killed by a late frost. It occurred to me that I was indebted to the salt, &c., for the abundance of fruit on the trees done in March, by its retarding vegetation; and from an experiment made in '39, it appeared to be the case, though I have never considered it of sufficient importance to repeat it, for the purpose of testing it further.

In regard to the best time to make this application, I would say about the first of April, and to those trees having worms in them again in June or September, as the appearance of the worm may indicate its necessity, using about two-thirds of the usual quantity for the June or September dressing, and to be used only in contact with the trunk of the tree. I have not discovered any great benefit from sowing it broadcast over the orchard every year; I prefer to do this every second or third year. If the tree is injured very much by the worms, to wash the bark of the trunk with a solution of this mixture and water might be of service, being careful not to apply too much; this should not prevent its application in a powdered state. To my trees, planted in the fall and spring, I apply as soon as done planting in the spring about one ounce upon the surface, in contact with the trunk of the tree, and repeat this quantity again early in June or September, the peach worm at these two last periods, being in their infancy, are destroyed.

In August, after one application of this mixture to my young trees in the spring, I have taken

several worms from off the outer bark of a tree, bedded in gum, they having punctured it in a number of places, but did not penetrate to do any injury to the inner bark, while the next tree left without the above mixture was nearly destroyed, the inner bark being eaten for more than two-thirds around the tree. It might be supposed that the salt and saltpetre would produce instantaneous death, but this is not the case; I have kept them half covered in a solution of salt and water, and saltpetre and water, and in these two articles combined for several hours without causing death; they will avoid its approach, and will not remain in it unless compelled by necessity.

In compliance with the promise heretofore made, I have endeavored to give in a brief manner my practice on the peach tree for five years, from which I have no reason to make a change, but many inducements for a continuance of the practice. If you consider it sufficiently important for publication, it is at your disposal, and if any benefit should arise therefrom, be assured it would be the highest reward for any services of mine that could be tendered to yours,

LYTTLETON PHYSICK.

*Ararat Farm, Cecil county, Md.,  
July 6, 1841.*

#### THE ALPACA.

From the (London) Farmers' Magazine.

The Alpaca is being attempted to be naturalized in Britain, and is now possessed by several noblemen and gentlemen in England and Scotland. A memoir on the subject has been addressed to the proprietors of waste lands by Mr. Walton, and is now published in the shape of a pamphlet by Smith and Elder, London; and Connell, Liverpool. The animal is a native of the Andes Cordilleras, of Peru, and inhabits the cold regions elevated 8,000 to 12,000 feet above the level of the sea. There they find their favorite and peculiar beverage, the ichu plant, one of the gramineous tribe, which grows to a considerable height, and produces in suitable places some good natural meadows. The naturalists place them in the natural order of "Ruminantia," but they also bear a comparison with the "Caprines;" and in some properties approach the camel. The constitution is hardy, and adapted to cold, mountainous regions. The only doubt entertained with regard to our climate is the humidity, our latitude producing that noxious quality, though the degree of dry cold is less intense. The wool is fine and glossy, and resembles silk more than common wools; considerable quantities have been imported, and in the custom-house returns it is included under the article "mohair yarn," which is manufactured into camlets and moreens. Many persons think alpaca wool will suit the manufacture of Cashmere shawls. Fine goods are mixed with alpaca wool, and in many cases it passes for silk.

The flesh resembles that of the deer, and is well adapted for hams. The skin is useful in book-binding, and in making belts and straps. The average weight of the carcass of the alpaca is about 200 lbs., and many of them much exceed that weight. In our country the carcass is rather more regarded than the wool; and, under our

present habits of living, any animal less useful for producing animal food would not compete with our known breed. But it appears the alpaca is recommended for situations not used for sheep—or, at least, very rarely—and if they succeed in parks and enclosures in the first place, the trial in exposed situations will be very interesting. Such experiments, with a view to add to production, and the employment of labor especially, claim the attention of the wealthy and the support of the community. At present the few attempts do not warrant any general conclusion, but are favorable so far as they have gone. The patriotic individuals who now possess the animals will no doubt bring their capabilities to a just and satisfactory test.

#### BLISTER FLIES.

From the Kentucky Farmer.

We are sorry to hear that these insects are doing much mischief in various quarters. We hear of their ravages in Clarke and Woodford, and have seen a specimen of their labors in this county. They attack a crop of beets, potatoes, or other plants having soft succulent leaves, and they despoil them utterly of their foliage. The consequence is, great damage is done to the crops attacked.

We are not entomologist enough to describe the fly technically; but believe it is a species of the *cantharides* genus. At any rate, we are advised by Dr. Parker of Shelby and Dr. Martin of Clarke, that they make a capital blister. Dr. Parker asserts this upon late experience; and we suggest that, as some small indemnity for their ravages, it would be well to set the children of a farm about gathering them for sale to the apothecaries. They are supposed to be worth quite as much as the Spanish flies, and owing to their great number, it would be a lucrative business to get two, three or four dollars a pound for them. A farmer told us he shook at least 500 off one beet; and they could nearly all have been taken in one minute and bottled, being sluggish in their action.

It is a black or dark-colored fly, near an inch long, with a small head proportioned to the size of the body, which enlarges towards the tail. There is a white stripe along the back. We have had but little opportunity of making any observation on the "black bug" as some call the insect; and would be thankful to any one for a description of it as well as a suggestion of the means of preventing its ravages. They have been increasing of late years.

#### TOMATO FIGS.

From the American Farmer.

Patent Office, July 10, 1841.

Dear sir,—The medicinal qualities of tomatoes have greatly increased their cultivation, and every new preparation of the article is deserving consideration. A sample of "tomato figs" has just been deposited at the patent office of a very superior quality,—from the taste I should suppose all the good qualities of the fruit are retained. In appearance the drum of tomatoes resembles one

of figs so nearly that they might easily be mistaken for the same.

The sample is deposited by Mrs. Steiger, of this city, and the recipe transmitted with it is enclosed for publication. It is deeply to be regretted that since the periodicals of the day are open to communications, so many valuable improvements are lost to the world barely for the want of publicity. Others may have dried the tomatoes with a recipe, however less successful.

Very respectfully, H. L. ELLSWORTH.

Hon. J. S. Skinner.

Take six pounds of sugar to one peck (or 16 lbs.) of the fruit. Scald and remove the skin of the fruit in the usual way. Cook them over a fire, their own juice being sufficient without the addition of water, until the sugar penetrates and they are clarified. They are then taken out, spread on dishes, flattened and dried in the sun. A small quantity of the syrup should be occasionally sprinkled over them whilst drying; after which, pack them down in boxes, treating each layer with powdered sugar. The syrup is afterwards concentrated and bottled for use. They keep well from year to year, and retain surprisingly their flavor, which is nearly that of the best quality of fresh figs. The pear-shaped or single tomatoes answer the purpose best. Ordinary brown sugar may be used, a large portion of which is retained in the syrup.

#### TABLE OF MANURES:—THEIR PROPERTIES AND MODE OF APPLICATION; FOR THE USE OF THE AGRICULTURIST; BY JOHN ROBINSON, M. B.

From the (London) Farmers' Magazine.

Manures are intended to supply food to plants and ultimately to become constituent parts of them. Thus, when we wish to apply manure in the case of wheat, it will be proper to ascertain from the stalk and grain, what substances are required. In the stalk we have potash combined with silicious acid; if the soil, then, contain neither of these constituents, we must supply them by artificial means or by manuring. In the grain, again, we find, on analysis, phosphoric acid in combination with magnesia and potash. In like manner, these must be supplied, if deficient in the soil. The usual manures give these substances, though the subject is not scientifically understood by mere practical men.

In the cultivation of the turnip this is strikingly clear. As that vegetable contains phosphoric acid in quantity, phosphoric acid, if not present in the soil in sufficient quantity, as it rarely is, must be supplied to it. For instance, bone dust answers this purpose, as bone is composed chiefly of phosphoric acid and lime. The excrements of man and animals contain also phosphoric acid; fish manure acts precisely in the same way, as fish contain phosphoric acid in abundance. Fish oil is proper for turnips on the same grounds. The instances might be multiplied to a great length. It may not here be out of place to remark that all substances, whether organic, earthy, or saline, which are employed to fertilize the soil, or become the food of plants, can only be render-

ed thus serviceable to vegetation when they are presented to the roots in a fluid state; and such is the fact, that the compost of the farm-yard, the crushed bones of the turnip cultivator, the oil and bones of fish, the gypsum of the grazier, the earths, lime, magnesia, and even silica, and all the saline manures, are dissolved by some process or other, before they can be absorbed by vegetables.

#### SOURCE OF THE CARBON OF PLANTS.

From Johnston's Lectures.

We have already seen reason to believe that carbon is incapable of entering directly, in its solid state, into the circulation of plants. It is generally considered, indeed, that solid substances of every kind are unfit for being taken up by the organs of plants, and that only such as are in the liquid or gaseous state, can be absorbed by the minute vessels of which the cellular substances of the roots and leaves of plants are composed. Carbon, therefore, must enter either in the gaseous or liquid form, but from what source must it be derived? There are but two sources from which it can be obtained,—the soil in which the plant grows—and the air by which its stem and leaves are surrounded.

In the soil much vegetable matter is often present, and the farmer adds vegetable manure in large quantities with the view of providing food for his intended crop. Are plants really fed by the vegetable matter which exists in the soil, or by the vegetable manure that is added to it?

This question has an important practical bearing. Let us, therefore, submit it to a thorough examination.

We know, from sacred history, what reason and science concur in confirming, that there was a time when no vegetable matter existed in the soil which overspread the earth's surface. The first plants must have grown without the aid of either animal or vegetable matter—that is, they must have been nourished from the air.

It is known that certain marly soils, raised from a great depth beneath the surface, and containing apparently no vegetable matter, will yet, without manure, yield luxuriant crops. The carbon in such cases must also have been derived from the air.

You know that some plants grow and increase in size when suspended in the air, and without being in contact with the soil.

You know also, that many plants—bulbous flower roots for example,—will grow and flourish in pure water only, provided they are open to the access of the atmospheric air. Seeds also will germinate, and, when duly watered, will rise into plants, though sown in substances that contain no trace of vegetable matter.

Thus De Saussure found that two beans, when caused to vegetate in the open air on pounded flints, doubled the weight of the carbon they originally contained.

Under similar circumstances Boussingault found the seeds of trefoil increase in weight  $2\frac{1}{2}$  times, and wheat gave plants equal in weight, when dry, to twice that of the original grains.\* The

source of the carbon in all these cases cannot be doubted.

When lands are impoverished, you lay them down to grass, and the longer they lie undisturbed the richer in vegetable matter does the soil become. When broke up, you find a black fertile mould where little trace of organic matter had previously existed.

The same observation applies to lands long under wood. The vegetable matter increases, the soil improves, and when cleared and ploughed it yields abundant crops of corn.

Do grasses and trees derive their carbon from the soil? Then how, by their growth, do they increase the quantity of carbonaceous matter which the soil contains? It is obvious that, taken as a whole, they must draw from the air not only as much as is contained in their own substance, but an excess also, which they impart to the soil.

But on this point the rapid growth of peat may be considered as absolutely conclusive. A tree falls across a little running stream, dams up the water, and produces a marshy spot. Rushes and reeds spring up, mosses take root and grow. Year after year new shoots are sent forth, and the old plants die. Vegetable matter accumulates; a bog, and finally a thick bed of peat is formed.

Nor does this peat form and accumulate at the expense of one species or genus of plants only, Latitude and local situation are the circumstances which chiefly affect this accumulation of vegetable matter on the soil. In our own country, the lowest layers of peat are formed of aquatic plants, the next of mosses, and the highest of heath. In Tierra del Fuego, "nearly every patch of level ground is covered by two species of plants (*astelhapumila* of Brown, and *donatia magellanica*), which by their joint decay, compose a thick bed of elastic peat." "In the Falkland Islands almost every kind of plant, even the coarse grass which covers the whole surface of the islands, becomes converted into this substance."†

Whence have all these plants derived their carbon? The quantity originally contained in the soil is, after a lapse of years, increased ten thousand fold. Has dead matter the power of reproducing itself? You will answer at once, that all these plants must have grown at the expense of the air, must have lived on the carbon it was capable of affording them, and as they died must have left this carbon in a state unfit to nourish the succeeding races.

This reasoning appears unobjectionable, and, from the entire group of facts, we seem justified in concluding that plants every where, and under all circumstances, derive the whole of their carbon from the atmosphere.

In certain extreme cases, as in those of plants growing in the air and in soils perfectly void of organic matter, this conclusion must be absolutely true. The phenomena admit of no other interpretation. But is it as strictly true of the more usual forms of vegetable life, or in the ordinary circumstances in which plants grow spontaneously or are cultivated by the art of man? Has the

\* Darwin's *Researches in Geology and Natural History*, pp. 349-50. Dr. Greville informs me that the *astelia* approaches more nearly to the junceæ or rush tribe, and the *donatia* to our tufted saxifrages, than to any other British plants.

\* Ann. de Chim. et de Phys. lxvii. p. 1.

vegetable matter of the soil no connexion with the growth of the trees or herbage?—does it yield them no regular supplies of nourishment? Does nature every where form a vegetable mould on which her wild flowers may blossom and her primeval forests raise their lofty heads? Has the agricultural experience of all ages and of all countries led the practical farmer to imitate nature in preparing such a soil? Does nature work in vain?—is all this experience to be at once rejected?

While we draw conclusions, legitimate in kind, we must be cautious how, in degree, we extend them beyond our premises.

The consideration of one or two facts will show that our general conclusion must either be modified or more cautiously expressed.

It is true that plants will, in certain circumstances, grow in a soil containing no sensible quantity of organic matter—but it is also true, generally, that they do not luxuriate or readily ripen their seed in such a soil.

It is consistent with almost universal observation, that the same soil is more productive when organic matter is present, than when it is wholly absent.

That if the crop be carried off a field, less organic matter is left in the soil than it contained when the crop began to grow, and that by constant cropping the soil is gradually exhausted of organic matter.

Now it must be granted that tillage alone, without cropping, would gradually lessen the amount of organic matter in the soil, by continually exposing it to the air and hastening its decay and resolution into gaseous substances, which escape into the atmosphere. But two years' open fallow, with constant stirring of the land, will not rob it of vegetable matter so effectually as a year of fallow succeeded by a crop of wheat. Some of the vegetable matter, therefore, which the soil contained when the seed was sown, must be carried off the field in the crop.

The conclusion, therefore, seems to be reasonable and legitimate, that the crop which we remove from a field has not derived all its carbon directly from the air—but has extracted a portion of it immediately from the soil. It is to supply this supposed loss, that the practical farmer finds it necessary to restore to the land in the form of manure—among other substances—the carbon also of which the straw or hay had robbed the soil.

But how is this reconcileable with our previous conclusion, that the whole of the carbon is derived from the air? The difficulty is of easy solution.

A seed germinates in a soil in which no vegetable matter exists; it sprouts vigorously, increases then slowly, grows languidly at the expense of the air, and the plant dies stunted or immature. But in dying it imparts vegetable matter to the soil, on which the next seed thrives better—drawing support not only from the air, but by its roots from the soil also. The death of this second plant enriches the soil further, and thus, while each succeeding plant is partly nourished by food from the earth, yet each, when it ceases to live, imparts to the soil all the carbon which during its life it has extracted from the air. Let the quantity which each plant thus returns to the soil, exceed what it has drawn from it by only

one ten-thousandth of the whole, and—unless other causes intervene—the vegetable matter in the soil must increase.

Thus while it is strictly true that the carbon contained in all plants has *been originally* derived from the air—it is not true that the *whole* of what is contained in any one crop we raise, is *directly* derived from the atmosphere—the proportion it draws from the soil is dependent upon numerous and varied circumstances.

The history of vegetable growth, therefore—in so far at least as the increase of the carbon is concerned—may be thus simply stated:—

A plant grows partly at the expense of the soil, and partly at that of the air. When it reaches maturity, or when winter arrives, it dies. The dead vegetable matter decays, a part of it is resolved into gaseous matter and escapes into the air, a part remains and is incorporated with the soil. If that which remains be greater in quantity than that which the plant in growing derived from the soil, the vegetable matter will increase; if less, it will diminish.

In warm climates the decay of dead vegetable matter is more rapid, and therefore the portion left in the soil will be less than in more temperate regions—in other words, the vegetable matter in the soil will increase less rapidly—it may not increase at all.

As we advance into colder countries, the decay and disappearance of dead vegetable matter, in the form of gaseous substances which escape into the atmosphere, become more slow, till at length, between the parallels of 40° and 45°, it begins to accumulate in vast quantities in favorable situations, forming peat bogs of greater or less extent. While the living plant here, as in warm climates, derives carbon both from the earth and from the air, the dead plant, during its slow and partial decay, restores little to the atmosphere, and therefore adds rapidly to the vegetable matter of the soil.

Again, in one and the same climate, the decay of vegetable matter, and its conversion into gaseous substances, is more rapid, in proportion to the frequency with which it is disturbed or exposed to the action of the sun and air. Hence this decay may be comparatively slow in shady woods and in fields covered by a thick sward of grass; and in such situations organic matter may accumulate, while it rapidly diminishes in an uncovered soil, or in fields repeatedly ploughed and subjected to frequent cropping.\*

Being thus fitted, by nature, to draw their sustenance—now from the earth, now from the air, and now from both, according as they can most readily obtain it—plants are capable of living, though rarely a robust life, at the expense of either. The proportion of their food which they actually derive from each source, will depend upon many circumstances,—on the nature of the plant itself—on the period of its growth—on the soil in which it is planted—on the abundance of food presented to either extremity—on the warmth and moisture of the climate—on the duration and intensity of the sunshine, and other

\* In removing a crop we take away both what the plants have received from the earth and what they have absorbed from the air—the materials, in short intended by nature to restore the loss of vegetable matter arising from the natural decay.

circumstances of a similar kind—so that the only general law seems to be, that, like animals plants have also the power of adapting themselves, to a certain extent to the conditions in which they are placed; and of supporting life by the aid of such sustenance as may be within their reach.

Such a view of the course of nature in the vegetable kingdom is consistent, I believe, with all known facts. And that the Deity has bountifully fitted the various orders of plants—with which the surface of the earth is at once beautified and rendered capable of supporting animal life—to draw their nourishment, in some spots more from the air, in others more from the soil, is only in accordance with the numerous provisions we every where perceive, for the preservation and continuance of the present condition of things.

By taking a one-sided view of nature, we may arrive at startling conclusions—correct, if taken as partial truths, yet false if advanced as general propositions—and fitted to lead into error, such as have not the requisite knowledge to enable them to judge for themselves—or such as, doubtful of their own judgment, are willing to yield assent to the authority of a name.

Of this kind appears, at first sight, to be the statement of Liebig, that “when a plant is quite matured, and when the organs by which it obtains food from the atmosphere are formed, the carbonic acid of the soil is no farther required”—and that, “during the heat of summer it derives its carbon exclusively from the atmosphere.”\*

A little consideration will show us that, while the proposition contained in the former quotation may be entertained and advanced as a *matter of opinion*—the latter is obviously incorrect. In summer, when the sun shines the brightest, and for the greatest number of hours, the evaporation from the leaves of all plants (their insensible perspiration) is the greatest†—the largest supply of water, therefore, must at this season be absorbed by the roots, and transmitted upwards to the leaves. But this water, before it enters the roots, has derived carbonic acid and other soluble substances from the air and from the soil, in as large quantity at this period, as at any other during the growth of the plant; and these substances it will carry with it in its progress through the roots and the stem.

Are the functions of the root changed at this stage of the plant's growth? Do they now absorb pure water only, carefully separating and refusing to admit, even such substances as are held in *solution*? Or do the same materials which minister to the growth of the plant in its earlier stages, now pass upwards to the leaf and return again in the course of circulation unchanged and unemployed, to be again rejected at the roots? Does all this take place in the height of summer, while the plant is still rapidly increasing in size? The opinion is neither supported by facts nor consistent with analogy.

But such an opinion, however the words above quoted may mislead some, is not intended to be advanced by Liebig; for in the following page he says, that “the power which roots possess of taking up nourishment does not cease so long as nutriment is present.” In summer, therefore, as

well as in spring or in autumn, the plant must be ever absorbing nourishment by these roots, if the soil is capable of affording it—and thus, in the general vegetation of the globe, the increase of carbon in growing plants must, at every season of the year, be partly derived from the vegetable matter of the soil in which they grow.

#### MOVEMENT OF THE PEOPLE FOR PROMOTING BANKING REFORM AND THE RESUMPTION AND MAINTENANCE OF SPECIE PAYMENTS.

In this number we are much gratified to publish the early transactions of the recently formed *Association for promoting Currency and Banking Reform*. All persons who are friendly to the great objects proposed, and opposed to the extension of the present and long continued procedure of the irresponsible banks of Virginia, and especially to the *permanent policy* of an irredeemable and depreciated paper currency, are earnestly requested to aid the efforts of the Association, by forming other branches, and procuring signatures to petitions for the resumption and maintenance of specie payments.

#### ASSOCIATION FOR PROMOTING CURRENCY AND BANKING REFORM.

*By order of the Executive Committee for Petersburg.*

An *Association for promoting Currency and Banking Reform* has been organized for the town of Petersburg, and has commenced operations. The Executive Committee thereof respectfully invite the co-operation of all those who are willing to do any thing for the great and all-important objects of the association; and to facilitate such co-operation, some general recommendations will here be submitted to the public.

It is recommended that the formation of *branches* of the association be forthwith commenced in every county and town; each branch to choose its own constitution and rules, its own officers, and determine its particular mode of operation; but all the branches to form one general association, and to act in concert for the great common object, by means of a common representative body, or Central Executive Committee.

It is also recommended that petitions be prepared and offered for general signature in every county and town in Virginia, praying for the resumption and maintenance of specie payments by the banks.

The form of constitution of the Petersburg Association will be copied below, and also the Petition adopted to be offered for general signature in Petersburg. These, as mere forms, may facilitate similar movements elsewhere, and may be altered to any extent, or wholly substituted, wherever other forms may be preferred.

Until other branches of the Association are in operation, and a Central Executive Committee shall have been formed, those persons who may desire to aid the cause, and to act in concert, may communicate with the Executive Committee of the Petersburg Association.

\* Organic Chemistry applied to Agriculture, p. 48.

† Lindley's Theory of Horticulture, p. 49.

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*Constitution.*

We, the undersigned, hereby unite to aid in forming an *Association for promoting Currency and Banking Reform*; and agree to be governed by the following constitution. The means to be used for the objects of the association, will be to aid the diffusion of correct information in regard to the uses and abuses of banking and currency, through the circulation of cheap publications, and by any other available mode for spreading knowledge and truth on this subject.

§ 1. Any person, friendly to the objects of the Association, may become a member by signing this constitution, and paying to the Treasurer an entrance fee of one dollar.

§ 2. The officers shall be an Executive Committee of seven members, to be elected by ballot in general meeting of the Association, to serve one year, or until a new election shall be held. The Executive Committee shall choose out of their body the President, Secretary and Treasurer

of the Association, who shall have the powers, and perform the duties, usually belonging to these several officers.

§ 3. The Executive Committee shall act according to its discretion, for furthering the objects of the Association, in all matters not otherwise directed or controlled by the Association in general meeting.

§ 4. Each member shall pay (besides his entrance fee before mentioned,) one dollar at each annual meeting.

§ 5. Seven members shall constitute a quorum at any meeting of the Association; and three members a quorum of the Executive Committee.

§ 6. This constitution may be amended or altered by a majority of the members present at any meeting of the Association, after notice having been given of the proposal to amend at the previous meeting, or, otherwise, to the Executive Committee one month or more previous to the amending.

## TO THE GENERAL ASSEMBLY OF VIRGINIA:

*The petition of the subscribers, voters or residents of the town of Petersburg, respectfully sheweth:*

That the general currency of any country being in irredeemable and therefore depreciated paper money, must always cause great and still increasing evils to the property interests, habits and morals of the people.

That the losses and injuries caused by such depreciated currency, are principally and necessarily borne by the producing classes, whose earnings and products are either directly made by honest labor, or derived from real capital which is itself the product of previous labor; while the profits and benefits of the irredeemable paper system accrue to other classes, and especially to the banks.

That since the banks stopped payment in May 1837, the people of Virginia have been suffering under the evils of an irredeemable and depreciated paper currency, and that forming the entire currency—with the exception of the short intervals of time, when the banks truly and fully paid their notes and other dues in specie.

That immediately after the first stoppage of payments by the banks, the General Assembly was convened for the purpose, and hastened to pass an act of indemnity for the violation of law, and of indulgence for the continued denial of payment by the banks, to a certain future limit of time; and that like indulgence has been again since extended, and before being extended, the privilege was assumed and acted on by the banks, in violation of the then existing law.

That though the last such legislative act of indulgence to non-paying banks is to expire by its own limitation next January, still, judging from past experience, your petitioners fear that the indulgence will be again and again extended by law, to the continued and increasing injury of the community.

Therefore, we pray of your honorable body, that no further extension may be permitted of the indulgence to the banks in their denial of payment of their notes and other debts; and that such enactments shall be made as will hereafter effectually prevent any bank of this state from withholding payment—or, at least, shall prevent the banks making profit (as heretofore and now,) by refusing to pay their dues, and inflicting on the community all the evils of an irredeemable and depreciated paper currency.

## SEASON AND CROPS.

On the evening of the day when our last remarks on this subject were printed (July 30th) the much desired rain fell here in abundance, and generally in all the neighboring counties within a few days thereafter. There have been repeated and abundant rains since, almost every where in this region; but still there are exceptions. The corn crop will be a good one.

The wheat crop so far as known, seems to have fallen short of even the last stated expectations. On the lower James River, however, the product

has been better than was supposed after harvest.

We regret that the facts communicated to us on this head have been very few. A farmer of Fauquier, and one of our subscribers, wrote as follows, on August 12th: "The crop [of wheat] in Fauquier, from the best information I can obtain is greatly below an average; in very many instances it yields little more than half the estimated quantity, in very few instances more than two-thirds. Quality good."

Within a week after our last month's statement that the prices of wheat here and in Richmond were too low compared to those of New York

and Baltimore, the prices rose here from 110 for red wheat, and 115 for white, to 125 and 130, at which prices some of the river crops were sold. Most of the large crops however have been held for higher prices, and as we thought injudiciously. However the last news from England seems to indicate that wheat will be higher, though there is no advance here yet on the prices stated above, to this date.

Judging merely from the season, we infer that, notwithstanding the very bad early and planting season, an average crop of tobacco may be expected, provided there should be a warm autumn and no early frost.—ED. F. R.

August 25th, 1841.

P. S. On 27th, the price of wheat, as we anticipated above, has advanced—to \$1.30 for red, and \$1.35 for white.

[Not having room for the communication to which the following was appended as a postscript, is the cause of presenting this alone.]

"Queen Ann's, Md., Aug. 14, 1841.

"For the last fifteen days our grounds have been saturated by rain. In consequence of our cold spring, our corn was planted late; it was scarcely checked by the drought, much of it is now in fresh silk, and should the fall be favorable, we shall make enough to serve us, and some for market; but should there be a cool month of September, or an early frost in October, the crop will be small."

#### A SAMPLE OF EDITORIAL AND PUBLICATION PROFIT.

In June and the early part of July we performed part of our annual task of sending bills for arrears of subscription money, due from one class of debtors only, that is, those whose names had been *erased from the list*, at the end of the last volume and previously for non-payment. These bills amounted to between \$4000 and \$5000. Now how much does the reader guess has been since received, from the many individuals thus reminded of their neglected obligations? A novice in such business would perhaps guess a thousand dollars—certainly not less than five hundred—or one more experienced may suppose \$100 to \$200. But the true product of the problem is surprising even to us. The fact is, that to this 25th day of August, not one of these bills or one cent thereon has been paid!!!

There is another large class of debtors to whom no bills have been yet sent, and we scarcely think it worth while to subject them to pay the postage

on their bills, or for us to take the trouble of writing them, for the very small chance of receiving any compensating return. These are some hundreds of the subscribers to the Carolina Planter, transferred to our list, and who, did not discontinue their subscription, and who received the substituted Farmers' Register for 6 months (until it was stopped by our own act,) without making any compensation.

On the cover of this number will be marked the amount due (if any thing) from such existing subscriber, for the current or any previous volumes.

With a subscription list larger than at any previous time, and of more value according to the amount which should have been paid by subscribers, our publication has never been of so little profit as for this year. If this is owing to the "disordered state of the currency," we are heavily punished by the operation of the swindling banking system for the efforts we make to put it down.

#### SUMMARY OF NEWS.

Friday, August 6, 1841.

The Great Western steam-ship arrived at New York on the 31st of July, bringing accounts from England to July 14th.

The results of the elections of Great Britain had been so nearly all reported, that it was certain that the Tory or Conservative party will have a strong majority in the House of Commons. Of course the present Whig ministry will go out. Sir Robert Peel will be the head of the Tory ministry. The corn laws will not be repealed, nor free trade otherwise greatly forwarded.

Daniel O'Connell had lost his election for Dublin, but will be in parliament as member elect of Meath.

The insurgents of Candia have had several sanguinary conflicts with the Turkish forces, and are still gaining strength.

The emperor of Russia has assumed the title of "Defender of the Christians of the East." This assumption is full of meaning.

The soldiers who formed the garrison of Albuquerres, in Spain, had mutinied, overcome all authority there, and committed the greatest excesses, which continued for more than a week. The last report stated that the mutineers had submitted.

The report of the English corn market and prospects was such as to raise the price of flour in New York fifty cents the barrel.

In Georgia the proper steps are now taking to oppose the swindling banking system, and compel banks either to resume payment, or cease to defraud the public by keeping their depreciated paper money afloat. The Augusta Chronicle contains the following notice. The frauds of banks and of the paper system must indeed be enormous, when the commercial community stands up against them. This movement commenced at Macon, and is called the "Macon specific."

"Public notice.—In consequence of the great inconvenience and loss attending the circulation of a depreciated and fluctuating currency; believing it to be the inte-



rest equally of the planter, as of the merchant, to have a sound currency of uniform value; and believing that this can be secured only by encouraging the circulation of the notes of such banks as pay specie for their issues, promptly, to all demands; and also believing that it will result to the material interest of the whole state; by reducing the price of merchandise, and enabling the planter to receive a sound circulating medium for his crop, the undersigned, merchants, factors and citizens of Augusta, have determined that from the opening of the fall market, for the present growing crop, say after the first of October next, they will not receive in payment, or pay out, the bills of any of the suspended banks, except at their current market value, taking the bills of specie paying banks as the standard. [Signed by 184 commercial firms, factors and citizens of Augusta.]

**"Resumption.**—A gentleman from Alabama informs us, that there the people are coming very generally to repudiate all bank notes which are not payable in specie on demand. They have suffered by the depreciation of bank notes, and by the failure of one bank after another, and have been wronged in so many ways by the banks, that they are becoming determined in their resistance to the farther continuance of the fraudulent system. Gold and silver are coming again into circulation, for the people will part with their property for nothing else. A few private banks, paying specie, are getting into operation, which furnish a sound paper currency; but they are not much known. From Georgia and from Michigan we have published the proceedings of public meetings repudiating the paper of suspended banks. From three states, therefore, we have learned that the principles of liberty, not regulation, are purifying the currency. Another year of the uninterrupted operation of these principles would probably restore soundness to the currency in most of the states; and when so restored, the currency would remain sound. The laws of nature cure evils, but legislative quackery plasters them over, so that the first time the patient takes cold, they break out again. If the people could see the operations of nature for another year, the doctors would be compelled to throw away their pills, and allow the patients to get well.—*Journal of Commerce.*

**Specie.**—The packet ship Albany, at New York, from Havre, brings 1,052,800 francs.

The steam-ship Acadia arrived at Boston on the 2d, bringing accounts to July 20th, 6 days later than those by the Great Western.

The election returns were nearly all received. The Conservative or Tory party will have a majority of about 80 in the House of Commons.

The cotton market remains as before.

**"London, July 17.** Cotton—There has been a fair demand this week, and full prices paid. The private transactions amount to 1340 bales Surat at 4d to 5½d, 900 Madras at 4½d to 5d, 60 Bengal at 4½ to 4¾d, 300 Bowdels at 5½ to 6½ in bond, and 150 West India at 7d to 8d per lb. duty paid."

The prospect of crops was favorable.

A very threatening riot or insurrection had taken place in Toulouse, (France,) on the 12th, which was quelled on the second day by military force.

The town of Villa da Prain, in the island of Terceira, has been destroyed by a series of earthquakes, from 12th to 15th of June.

The Greeks in Candia have suffered severe losses in recent skirmishes. The Turkish force there is eight thousand strong.

Samuel Swartwout, the great defaulter, has returned from Europe in the Acadia. We presume that he has heard of so many defalcations and robberies by officers in trust, that he supposes he will now find a large circle of such associates and companions in misfortune, and all of these gentlemen of high character and re-

spectability. It is reported that Swartwout's successor, Hoyt, though so short a time collector of New York, has managed to be a defaulter for \$150,000.

The Jacksonville (Fl.) bank robbers have been discovered and arrested, and, as we ventured to assume at first, they prove to be an officer of the bank—to wit, Town, the teller. Mather, the president is implicated in the charge. Nearly all the stolen money had been recovered.

A regular and extensive conspiracy for insurrection among the slaves, on many plantations on the lower Mississippi, was lately detected, a few days before the intended outbreak. Forty or fifty slaves have been arrested, and await their trials. White men are implicated, one of whom is in jail.

Matthias, the pretended prophet or Messiah, who made so much noise some years back in New York, died lately in the western part of North Carolina.

The levee across the river from New Orleans is still giving way. "The slide has extended a distance of about 200 feet, and the water where the caving has occurred, is 32 feet deep."—*New Orleans Bee.*

Houston, Texas, which was settled five years ago, has now four thousand inhabitants, and within the same period there have been six thousand burials, an average of nearly four for every day in the year.

The faculty of Amherst College, Massachusetts, a seventh-rate institution, have endeavored to add to their dignity (and something more perhaps) by insulting President Tyler with the offer of a diploma of Doctor of Laws.

**An Association for promoting Currency and Banking Reform** has just been organized in Petersburg; and although commenced in a town, under the chilling shadow of three banks, and of course obstructed by all the influence of the banks and dread of their hostility, the effort has already succeeded beyond all previous expectation. The list of members shows the names of men of all parties, (except of the party of thorough bank slaves, or advocates of a permanent irredeemable currency,) including some of the most respectable merchants, and also the delegate of the town of Petersburg, who was recently elected by so surprising a majority. The first acts of the Association are published on the previous pages of this number. It is expected that more than half the voters of Petersburg will sign the petition for resumption of bank payments, in spite of all the power and indirect influence of the banks, to the contrary. But in the country, where bank terrors are as yet but little felt or dreaded, far greater success may be counted on, wherever any one zealous individual will make an effort for the purpose. In the country there are very few slaves to bank power, and almost as few apologists for the swindling features of the banking system. The petition for resumption of payments, if properly presented, will obtain the signatures of four-fifths of the voters of lower and middle Virginia; and the banks will not dare to ask, nor the legislature to grant, a further suspension, termed and pretended to be temporary, but which in fact would be designed to be but one more of the years of the permanent policy of an entire currency of irredeemable and depreciated bank notes. Every bank measure and law for the last four years have been but preliminary steps to this general policy; and every argument and statement made in favor of continued temporary suspension of payment, serve as well for the permanent stoppage, and which will be openly supported, as soon as the irredeemable paper advocates are strong enough to venture to tell the truth in this respect, and avow their designed object. Let a branch of the Association be forthwith formed in every county, and a petition for resumption be signed by all who approve the measure, and before next March the present fraudulent banking system of Virginia will be controlled by law, stripped of its overwhelming power, and have infused into it something of honest and useful tendencies in relation to the public interests.

Friday August 18, 1841.

Besides the great Swartwout, another absconded defaulter has returned, and is at large at home in Connecticut. This is the Hon. Asa Child, who took only \$80,000 of the rail-road fund in his charge.

Letters from New Orleans say that the sudden death of one of the tellers in the Canal Bank had caused an investigation into his accounts, which, as far as the examination had proceeded, had disclosed a deficit of over \$80,000.

The report of a conspiracy for insurrection among the slaves of Louisiana turns out to be as false as such reports usually are. The slaves charged with the offence have been tried, and all acquitted. The white man has not yet been tried, but is expected to be acquitted.

Three ministers of the Gospel, or students for the ministry, belonging to an abolition institution in Illinois, lately attempted to entice some slaves across the Mississippi, (in Missouri,) to avail of their assistance to enable them to escape to Canada. The slaves agreed to the proposal, and to the appointment of a time when the deliverers were to cross the river in the night, to carry off the slaves to the Illinois shore. The slaves informed their master of the scheme, and the missionaries were arrested in the fact, and are in jail awaiting their trial. It is a states-prison crime, and if proved guilty, the holy emancipators may have ten or twelve years to play the characters of persecuted apostles and martyrs, while laboring as convicted felons.

United States Bank stock lately fell to 14½. It has since recovered a little, and was at 14½ in New York, Aug. 9th.

The ship Akbar has arrived at New York direct from Canton, bringing accounts to April 16, and 16 days later than before.

The English forces had made some further successful but not very important advances, but serving to confirm the impression made by preceding accounts, that Canton was in effect in their power and possession, and the Chinese unable to present any effective resistance, to further encroachments. The trade was open for the present, under the British authorities over Canton. In the various affairs, from 2500 to 3000 of the Chinese troops have been killed, and 800 pieces of their cannon taken. The loss of the British in killed and wounded is almost nothing. The supply of tea by the Akbar, and the news, have reduced the price of teas, which had risen, in expectation of the trade being suspended.

The Savannah Republican of August 7th, has the following good news of the Florida war:—By the United States steamer Gen. Taylor, Capt. Peck, arrived here yesterday, we have the gratifying intelligence from Florida, that the war for the ninety-ninth time, may now be considered as at an end. Wild Cat's whole band, men, women, children and negroes, 160 in all, have come in at Tampa, and 40 more Indians of another band were on their way, and were expected at Tampa in two days. A gentleman who came on in the Gen. Taylor, says that he does not think another rifle will be fired by the enemy."

Col. Worth, as commander in chief in a Floridian summer campaign, seems to be worth more than all of his sunlry predecessors put together. We rejoice to award to him due honor; but we protest in advance against a claim being thereupon set up to make Col. Worth president of the United States.

*The Macon Specific.*—"This great move of Georgia is destined to work a complete cure of the evils of the currency. Already exchange on Augusta is quoted in New York 1 to 1½ instead of 15."—"All notes of the banks of Georgia are hereafter to be received and paid away at their specie current value only. All banks who resume and stay resumed, their bills go at par; all others at their current discount: acceptances

paid, and drafts bought accordingly. Every price current should note the above."—*Charleston Mercury.*

We trust that "the Macon specific," or some equally active and operative remedy, will be administered to all the non-paying banks, and that every member and branch of the whole great swindling paper system may be soon forced to compliance with legal and moral obligations.

The statements rendered by the three principal banks of Virginia show their respective amounts of notes in circulation and specie to be as follows on July 1:

*Bank of Virginia and branches.*

Notes in circulation, - - - \$2,649,798  
Specie on hand, - - - 821,442  
Or \$1 specie for \$3.22 of paper in circulation.

*Farmers' Bank and branches.*

Notes in circulation, - - - \$2,339,015  
Specie - - - 677,580  
Or \$1 specie for \$3.43 of paper in circulation.

*Exchange Bank and branches.*

Notes in circulation, - - - \$774,065  
Specie on hand, - - - 233,839  
Or \$1 specie for \$3.31 paper in circulation.

We have not yet received the report from the smaller western banks, but presume they are no better off. The general proportion of all the Virginia banks on January 1, 1841, was \$1 specie to every \$3.05 of paper in circulation, which was being something better prepared to pay specie than after another half year of pretended "preparation" to pay. At this rate of *preparing*, the banks of Virginia will *never* be ready to resume payments; and they never will resume, unless compelled by some stronger action than has yet operated on them.

*By this morning's mails, August 13th.*

The amount of loss sustained by the robberies, frauds and failures of bank officers and banks, within the last few months, is enormously large. Few would believe the astounding aggregate which they form, until they should see them enumerated and footed, which we here do, so far as we can now recollect:

U. S. Bank, suspended debt, lent to politicians,	- - -	\$20,000,000
U. States Bank, taken by officers—no vouchers,	- - -	1,200,000
Schuylkill Bank,	Levis,	1,200,000
Manhattan Bank,	Newcomb,	50,000
do. do.	Officers and family,	500,000
Virginia Bank,	Dabney,	500,000
Georgia Bank,	Barker,	80,000
Frederick Bk., Maryland,		186,000
Norwich Railroad,	President,	10,000
Bank of Louisiana,	Teller,	60,000
Bank of Orleans,	do.	80,000
Canal Bank, New Orleans, do.		100,000
Bank of Michigan,	Officers,	100,000
Illinois Bank,	Mr. Town,	90,000
Merchants' Bk. Balt.,	Clerk,	10,000
Tenn. Bk., at Nashville,	do.	7,000
Frankfort Bank,	President,	100,000
State Bank, Arkansas,	Fayetteville,	64,000
23 N. Y. Free Banks,		1,500,000
Pennsylvania Bank,	Smith, clerk,	100,000
Western Bank,	Israel, cashier,	15,000
Camden Bank, N. J.,	Peterson, clerk,	13,000

\$34,615,000

These are but a small part of the losses that have recently occurred. That the public may be fully enlightened as to the real amount of cost in this particular which the people bear for the *benefits* of paper money, we trust that the press in various sections of the country will make such additions as come within their knowledge and here omitted.—*Phil. Ledger.*

**Richmond Prices Current.**—"Grain—Wheat 120 to 125 cents per bushel, and 130 could we think be had for good crops. Corn getting scarce—we quote 62 to 65 cents per bushel. Oats—in vessels 40 cents, and 42 cents from depot."—*Compiler of 13th.*

The Washington papers of yesterday contain nothing as to the President's disposition of the bill for establishing a national bank; and it may be presumed now, with a great degree of confidence, that he will send it back to congress with his veto. *That result is indeed almost certain.* The bill to repeal the independent treasury law has passed both houses, and likewise abides the decision of the President.

**Another Bank Robbery.**—Wm. M. K. Ball, cashier of the bank of the State Bank of Arkansas, at Fayetteville, recently absconded leaving the bank minus some \$64,000.—*Aug. Chron.*

*Friday, August 20, 1841.*

Another horrible steamboat disaster has occurred on Lake Erie. The Erie, from Buffalo to Chicago, took fire and was burnt. Nearly 200 persons were burnt or drowned, and only 27 saved, by the timely arrival of the steamboat Clinton, which was in sight of the fire, and hastened to the relief of the survivors. Most of the passengers were immigrants newly arrived from Germany. Their property, and specie, with the other cargo of the Erie, supposed to amount altogether to \$300,000, was a total loss.

Mr. Justice Wiley, of New York, the celebrated compounder of bank robberies, has been arrested on the suit of the Fredericktown Bank, and bailed for \$30,000.

There have been some indications, in the stealing of a piece of artillery near the Canada line, &c. of some new outbreak of "Canadian patriots." This may explain the movement of troops stated below—

"Four companies belonging to the 4th Regiment U. S. Artillery, Colonel Crane commanding, came by the Buffalo to day. Company B, Capt. Washington, and company F, Capt. Smead, remain at this post. D and K companies go on to Sacketts Harbor. The Buffalo came directly through in twenty hours from Detroit, and will be followed by the Illinois with the remainder of the troops, horses, &c."—*Buffalo Adv. 12th.*

**A financier suitably rewarded at last.**—"A. C. Farmington, late president of the Gallipolis Bank, alias swindling concern, has been convicted, and sentenced to the penitentiary for fifteen years."—*Phila. Ledger.*

Mr. Lyell, the distinguished English geologist, has arrived at Boston.

Another president of the United States Bank (Col. Drayton) has resigned. James Robertson, formerly cashier of the United States Branch Bank in Richmond, has been temporarily appointed to the place.

The murder of Mary Rogers, a beautiful and respectable girl, has attracted the earnest attention, and horrified the feelings of the city of New York for several weeks. The circumstances so far as known were too shocking to be stated. It is enough here to say, that after having been overpowered and brutally violated by 6 or 8 villains, she was murdered, and thrown into the Hudson. So far the perpetrators have escaped detection, if not even suspicion.

#### *The Veto to the Bank Bill.*

**August 18th.** The Veto of the President has been put upon the bill to establish a national bank, and the message was sent yesterday to the Senate. It is a strong and full state-rights' declaration, that leaves no ground on which to erect another bank bill of any kind. In this

most important matter, John Tyler has nobly maintained the ground on which our anticipations (published on his first accession) placed him, and on which only he can stand.

Previous to sending this veto on the bank bill, the president had signed the act repealing the independent treasury law. We are not yet sure what system of treasury policy now actually exists. If the requisitions of the earliest revenue law (of 1789,) are again brought into force, the general policy is still essentially that of the independent treasury plan, and will even be more strict in excluding bank paper from the treasury. If the later law (of 1816) is the one now brought into force, that also will be a "sub-treasury system" for Virginia, and all other states whose banks refuse to pay specie; as by that law, the notes of specie paying banks only will be receivable as money.

We are on the eve of most important political changes, if not of party revolution, the development of which will be commenced at Washington in a few days. Most important events must soon occur, though no one yet may foresee what will be the great result.

The petition for the resumption of specie payments by the Virginia banks, commenced in this town but 14 days ago, has already more than 200 signatures of voters or residents. We have no doubt that our former prediction of the signing by "more than half the voters of Petersburg" will be fulfilled, and with a considerable majority. This movement has already had some good effect in drawing forth the before concealed opinions of many of the supporters of *continued suspension*, or the still longer continuation of the present currency of irredeemable paper, from year to year. Before, all such persons were as silent as the grave, in regard to the necessity of another extension of indulgence to the banks. Now, opposition to the petitioners and their object is raised on the ground that the banks *ought not* to be required to pay next January. The reasons for still another year of suspension are quite plausible; and, moreover, they will serve as well for all future time as for the next year, and as they have served for the last four years. We should be much pleased if there could be a counter petition started in this town, asking for the continued suspension for another year, or of purport just the reverse of the other petition. We would warrant that for every signer it could obtain in Petersburg, the resumption petition would have at least five.

*(By this morning's mails, (Aug. 20th.)*

From the National Intelligencer of the 19th, we gather the following items: The bankrupt bill has passed both houses, and also the bill for rechartering the District banks. In the night after the veto message, an assemblage of riotous persons entered the enclosure of the President's house, and disturbed his family by insulting noises and language. A public meeting of the citizens of Washington is called by the Mayor, to express their disapprobation of this outrage. [All such use of *this species of bank argument*, however discreditable to our country, will render good service to the chief magistrate, and the cause, designed to be thus opposed.—Ed. F. R.]

The "money article" of the New York Herald of the 18th says:—

"Intelligence from Savannah states that the banks of that city have arranged to check on the North at one per cent. premium—the same as the Charleston rate—after the first day of September. It is thus seen that the exchanges between the several commercial points of the country are gradually becoming equalized and regulated without the aid of a National Bank. On New Orleans exchange is declining, in consequence of the near approach to resumption by its banks. Nothing but the healthy action of trade is wanted to equalize exchange throughout the country, and if well enough is let alone we shall soon be sound and strong."

"One hundred thousand dollars in specie have been shipped to England in the *Acadia*, which sailed from Boston yesterday."—*Id.*

It seems from many indications in the papers that another bank bill will be prepared, and passed by Congress, which the friends of the measure suppose may obtain the signature of the president. If this can be so, it must indeed be a very poor bill for the purpose for which it is mostly desired to be enacted, that is, to expand still more the paper currency, to furnish more loans to the borrowing class.

No steamer arrived, though momentarily expected at Boston.

*Friday, Aug. 27, 1841.*

The steamship *Columbia* arrived at Boston, via Halifax, on the 19th, in fifteen days from Liverpool, bringing accounts 16 days later. No political news of importance. "Cotton had slightly declined, and the state of trade was dull. American flour had advanced in price to 28s. 6d. for the best brands, and American wheat sold at 10s. to 10s. 4d. This was in consequence of the unfavorable state of the weather, and the consequent fear of a short crop."

The late collector of New York, Jesse Hoyt, has been sued by the government, damages laid at \$400,000. A like suit has also been brought against Phillips, formerly assistant cashier under Swartwout, damages laid at \$600,000. The defalcation now charged against Swartwout having dwindled down to \$400,000, he seems to be considered as almost innocent, and continues at large.

"The Banks of New Orleans being compelled to redeem their circulation in coin, or in default to pay 12 per cent. interest on judgment, suits are rapidly thickening, and it is thought probable there will be a speedy resumption of specie payment,—that the banks will be compelled to return to honesty, in self-defence." The same remedy has worked well on the banks of North Carolina, and will on those of Virginia, after January 1, unless the law should previously again suspend the penalty of 12 per cent. interest. Every note-holder who wishes to aid in compelling a return to specie payments by the banks of Virginia ought to make them endorse their notes to carry interest, though the rate is but 6 per cent. until January 1. The operation of the North Carolina 12 per cent. penalty has given an increased value to their bank notes, and thereby has withdrawn them from circulation here, to give way to the now worse currency of Virginia notes. South Carolina notes (being specie-paying) were lately worth 1½ per cent. in Richmond over the best Virginia bank notes.

The "Macon specific" is working well in the south, and will force the solvent banks to resumption and the others to bankruptcy. The like remedy has been applied in Michigan, and is now operating to good purpose in Ohio. The people have been there so cheated with depreciated or worthless paper, that very many have come to the determination to receive no depreciated bank notes, except at their market price in specie. This is what is called the "Macon specific." These and sundry other movements of the people are almost every where bringing nearer the prospect of a general resumption of specie payments. But nothing is to be hoped from legislative action, or from banking honesty, if left alone to operate.

The legislature of New Hampshire, by a vote of 138 to 99, passed a bill which makes the private property of the stockholders in all the banks hereafter to be chartered, liable to a certain extent, for the debts of the institution.—*Argus.*

"Merril B. Sherwood, we now learn on the best authority, left the country with a fine young lady, not his wife, in the ship *Renown*, at Philadelphia, bound for Hamburg. This distinguished man got up the Erie County Bank, swindled the state of Indiana out

of \$540,000, purchased the Dry Dock Bank, was made president, then resigned, and is now out of the country with his paramour, leaving his wife and children in Buffalo, to shift for themselves. It is supposed that Sherwood has taken \$200,000 with him, the proceeds of all the Indiana bonds equal to half a million."—*N. Y. Herald.*

The little steamer *Germ*, which steamed by sea from Norfolk to New York, has gone thence through the Erie canal and the lake to Kingston, U. C. This remarkable voyage speaks well for the value of Lieut. Hunter's invention.

The bankrupt bill has become a law. Unluckily, it does not operate on banks.

Wheeling bank notes are at 15 per cent. discount below the other depreciated Virginia bank notes.

Another bank bill (or as now called, a bill to establish a "fiscal corporation,") has already been hurried through the lower house of congress, and will no doubt pass the senate. We guess again, and with very great confidence, that this bill also will be vetoed.

In a fire at Syracuse New York, a keg of gunpowder exploded, and 29 persons were killed outright, and about 50 dangerously or severely injured.

It is now said that there were nearly 300 persons on board the *Erie*, all of whom perished except 27.

The commission which has been for more than three months engaged in investigating the alleged frauds and malpractices in the New York Custom house, has at last adjourned to Boston, to make there a like scrutiny.

According to the report of the post office auditor, there were on the 4th of March last 3337 postmasters in arrears to the government.

The Circuit Court of Rankin county, Miss., at its late session, decided that a loan, made by a bank, of depreciated bank paper, being an usurious transaction, is null and void, and that no collections should be enforced on debts thus contracted.

At the meeting of some of the banks of this city, which was recently held for the purpose of considering whether the "Relief Bill" should be accepted by them or not, it was urged that if the banks did accept the bill, every loan they made in the currency authorized by the law would be void as an usurious transaction, and could not be collected. This view of the matter is now declared to be law by the decision in Mississippi. In the same state it was recently directed that the public officers should not receive depreciated paper in the payment of debts due the state. They are getting upon the right track in that quarter.—*Phil. Led.*

*Down ! Down !! Down !!!*—The stock of the United States Bank sold in New York on Monday for 12 per cent. for 100.—*Id.*

England has now on the stocks or preparing, twenty-seven large steam vessels in addition to her present naval force.—*Id.*

The new Steubenville Bank (Ohio) has broke, and its effects are placed in the hands of commissioners empowered to wind up its affairs.

*By this morning's mails, (Friday 27th.)*

The steamboat *Louisiana*, on the lower Mississippi had one of her boilers to burst, on the 12th inst., by which 5 men of the crew were scalded to death, or blown overboard and drowned, and several more severely injured. 12 or 15 of the United States' soldiers, of a party on board, were missing and supposed to be dead.

The land distribution bill had not finally passed the senate on the 25th.

It is now reported that the explosion at Syracuse

was of 25 kegs of gunpowder, and that it was ammunition provided for the designed outbreak of a new set of "Canadian patriots."

The most extensive swoop of "Lynch law" yet known, has lately occurred in Arkansas. A numerous and desperate gang of counterfeiters had established their quarters in a place of secure concealment near the Mississippi. A party of 100 men volunteered for the purpose, and by disguising their boat as a common trader, decoyed 27 of the gang of counterfeiters on board, who were secured and *forthwith drowned!!!*

The packet to France carries \$62,000 of specie from New York.

The war in Florida, or the hunting and catching of Indians, is going on well. Two hundred and seven more Indians, who have surrendered or have been captured, are to be shipped from Tampa bay to the west on the 27th inst. Col. Worth expects the war to be ended in three months. *His expectations are of some account.*

The Danville branch of the Farmers' Bank of Virginia has been robbed by means of false keys to the vault, of \$92,135 in bank notes, of which \$72,000 were cancelled. These robbers, though successful, could not have been the "real Simon Pures" for such operations, (i. e. the bank officers,) or they would not have been such fools as to take *cancelled notes*, or *any notes*, if there was enough gold to be had instead. The president of the bank has advertised \$5000 reward for the detection, and the public are "cautioned from taking" the cancelled notes, "as they will not be redeemed by the bank." This "caution" goes too far—for if that is good ground for refusal, the public ought to refuse *all* the notes of the bank, as they are not, and (as long as possible to avoid it,) "will not be redeemed by the bank."

We beg to call attention, of the farmers of Virginia especially, and of the public in general, to one remarkable incident of recent and current banking history, to wit: that with all the indignation excited, and uttered, by and among the advocates or apologists of the banks, every thing has been directed to extraneous matters, altogether irrelevant to the main question of the effects of banking procedure; and not one fact, argument, or even one word, has yet been put before the public to defend or deny any abuse, or fraudulent operation of the system, of the many which we have endeavored to expose. The opposition, verbal or printed, to our facts and arguments in regard to the evils of banking, has been compounded principally of every possible charge that falsehood, calumny, envy and malice can rake up against our private as well as public life. How miserably weak must be any cause that is supported by such a course of *argument* as this! How utterly destitute must be the cause of the banks of every ground for defence, on the score of truth, honesty, and public utility, when from all the ready tongues and pens and presses at their command, not one word of reasoning, disproof, or even simple and plain denial, has been stated in their defence against any or all the many charges brought against them! Every dreaded opposer of the operation of the banking system may expect (for his sole reward, and as indirect testimony of the value of his services to the cause of truth,) to be denounced, slandered, and injured in every possible manner. But even if every such victim were, in his private life, as villainous and infamous as his worst enemies and slanderers would desire to have believed of him, *his sins*, certainly, would be no refutation of the facts and arguments brought against the actual operations of the *banks*, and the *banking system* of Virginia.

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# THE FARMERS' REGISTER.

VOL. IX.

SEPTEMBER 30, 1841.

No. 9.

EDMUND RUFFIN, EDITOR AND PROPRIETOR.

A DISCOURSE ON THE CHARACTER, PROPERTIES, AND IMPORTANCE TO MAN, OF THE NATURAL FAMILY OF PLANTS CALLED GRAMINEÆ, OR TRUE GRASSES.

(Concluded from last number.)

But, *revenons à nos moutons*—let us return to our grass seeds.

In some regions, where our common cultivated grains do not succeed well—either from the character of the climate or of the inhabitants—other grasses are employed as substitutes. The seeds of a tall aquatic grass, (*Glyceria frutans*, Br.), which grows spontaneously here as well as in the old world, are used, in the north of Europe, as an article of food, under the name of *manna seeds*, or *manne de Prusse*. In some parts of Asia, Africa and the south of Europe, food is prepared from the seeds of the several grasses which comprise the different kinds of *millet*, and a few others;\* but they are all inferior in value to the poorest of our *cerealia*, or cultivated grains. The plant called *millet*, in this region (*Setaria Germanica*? *Beauv.*) is valued chiefly for its *herbage*, and even that does not seem to command the attention of many farmers. The *true millet*—unknown in our agriculture—is believed to be a species of *panicum*, (*P. miliaceum*, L.); but there are other kinds, nearly allied to our broom corn, known by the names of Indian millet, (*Sorghum vulgare*, Pers.) Guinea corn, (*Sorghum cernuum*, Willd.) chocolate corn, (*Sorghum bicolor*, Willd.) &c. These have been cultivated here, occasionally, but rather as articles of curiosity than of agricultural importance. Our common broom corn (*Sorghum saccharatum*, Pers.) is cultivated, here, exclusively for the uses indicated by its popular name, as already noticed, though the stem contains much saccharine juice; and it is sometimes raised in Italy for the purpose of making sugar. The least valuable, perhaps, of our *cerealia*—or those grasses which are cultivated here, for the sake of the seeds—is the common oats (*Avena sativa*, L.) This grain is lighter and less perfect with us than it is in the north of Europe, and is almost entirely appropriated here to the feeding of domestic animals; but in less favored climes, as already remarked, it contributes largely, and directly, to the sustenance of man. One of the many sarcasms upon the Scotch, in which the great English lexicographer delighted to indulge, was his definition of *oats*, as the food of *horses in England*, and of *men in Scotland*—as if the effects of climate were a fit subject on which to taunt a people! The better quality of this grain is sometimes *malted*, when the demand warrants or rewards the labor, and a

small portion is manufactured into *meal*, as an article of diet for the sick; but both these operations are very limited in our country.

Ascending in the scale of value, we next find barley, (*Hordeum vulgare*, L.) a grain which, in some regions, is extensively used for *bread*, and more or less as food for horses and other stock; but, in our own country, it is almost exclusively employed in the manufacture of a rich *potation*, known to us all by the names of *beer*, *ale* and *porter*. The immense crops produced in the middle and northern states, are nearly all destined for the *breweries*,—a comparatively small portion being used in the distilleries. To prepare the grain for these establishments, it must undergo the process of *malting*, or incipient vegetation, in order to form the *sugar*, which is the source of the alcoholic strength of fermented and distilled liquors. It is found that when seeds begin to germinate, the *farina* or mealy portion is partly converted into sugar, by diminishing its carbon and augmenting the proportion of its hydrogen and oxygen; and this saccharine transmutation is precisely the operation of *malting*. The skill of the *malster* consists in arresting the germination at the critical moment, when the formation of *sugar* is most complete and abundant. This he does by drying it in a kiln.

The grain next superior in importance, being used to a considerable extent in making bread, is *rye*, (*Secale cereale*, L.) In our own state, from the force of custom, or prejudice, and the greater abundance of wheat, we are in the habit of undervaluing the bread made of this grain. But in many districts, where the soil is better adapted to the plant, rye is very generally used, and highly esteemed. It is also employed to a most mischievous extent, in the production of the ardent spirit called *whisky*. In this case the preliminary operation of *malting*, though sometimes practised, is generally dispensed with, as being too costly. The grain is merely chopped, or coarsely ground, and, in conjunction with a small per centage of malt, is subjected to fermentation; by which process, also, the *farina* loses a portion of its carbon, and becomes sufficiently saccharine to yield large quantities of impure alcohol. So great is the amount of ardent spirit procured from this grain, and so tremendous the abuse resulting from the practice, that it may be doubted, on the whole, whether rye does not contribute more largely to the *destruction* than to the *sustenance* of human life. Certain it is, that by the conversion of its wholesome *farina* into an intoxicating draught, it is made a potent instrument of physical and moral evil—a most prolific source of disease, misery and crime. All these mischiefs, however, arise from the misapplication and abuse of a positive good, for which man himself must be held accountable, and must expect the penalties inseparable from folly and wickedness.

The next most valuable plant, among the *cerealia*, is perhaps our Indian corn (*Zea mays*, L.) And, indeed, in the districts most favorable to its culture, it may be said to rival wheat it-

\* The seeds of the following grasses, also, are more or less employed, in the old world, as substitutes for the grains known to us, viz.: *Triticum spelta*, L., (which has been sometimes cultivated by the Germans in this state under the name of *spelt*.) *T. polonicum*, L., *panicum frumentaceum*, Roeb., *Elymus coracens*, Garta. and *E. stricta*, Roeb.

self, in importance. Those who are not in the habit of regarding the vegetable kingdom with a botanical eye, may possibly be surprised to hear this plant enumerated among the *grasses*: yet, if they will advert to the definition already given, they will find the Indian corn to be a genuine member of the *gramineous* tribe. It presents, indeed, one of the few instances in which the stem is solid with pith, instead of being hollow, or fistular between the nodes; but in every essential feature, it will be found, on examination, to be a true and undoubted grass.\* The same remark applies to the broom corn, the sugar cane, and some others, in which the culm is filled with pith. In a district like this, where every occupant of a field, or garden, cultivates his crop of Indian corn, it would be wholly superfluous to dwell on the excellence and manifold uses of this universal favorite. Suffice it to say, that, while it is the most productive of our cultivated grains, every portion of the plant has its value, in rural and domestic economy. The large pithy culm, about the time of flowering, is replete with a rich saccharine juice,—from which, no doubt, a considerable quantity of sugar might be extracted. The entire *herbage* is therefore highly esteemed, as a nutritious food for cattle,—the ears or spikes of fruit afford a choice treat to the epicure, even be-

\* The position and structural aspect of the fruit-bearing spike, or ear in this plant—though so different from the prevailing arrangement, in other *grasses*—are yet rendered perfectly intelligible by the *Goethean* theory of the development and modification of the vegetable organs. As the natural or normal termination of all stems, and branches—when fully developed—is in flowers and fruit,—it will be obvious, on examination, that, while the culm, in this instance, terminates as usual—though bearing only *staminate* flowers, the ears of Indian corn are, in reality, lateral *flowering branches*, on which the numerous pistillate flowers are concentrated into dense *spikes*; each spike being completely invested by the sheaths of abortive leaves which originate at the crowded nodes of the short, peduncle-like branch. That this is the true character of the involucre or husks is apparent from the fact, that several of the lower, or exterior sheaths, are often tipped with the laminae of imperfectly developed leaves (analogous to the awns of the paleæ in many smaller *grasses*);—indeed, in some instances, those sheaths may be seen bearing large foliaceous expansions—almost as perfect as the leaves of the main stem. I have also observed culms which put forth a flowering branch of every node,—a little ear protruding from the axil of every leaf, from the lowest to the uppermost;—though the usual number is two, or three, about the middle of the culm. The branch which supports the spike, is sometimes so much elongated that it becomes too weak to sustain its burthen erect,—in which case the mature ear is found drooping or pendulous by the side of the culm; and occasionally, we find the spike itself ramifying,—i. e. secondary branches, or spikes, issue from the axils of the sheaths composing the husk,—so that there is formed a compound spike, or cluster of several small ears, on the same primary branch. There is also a variety of maize, in which the flowering spikes are still further developed;—each floret and fruit on the receptacle, being completely segregated, sub-pedunculate, and provided with its own proper husks, or involucre,—while the *whole* are included in the common external envelope. Sometimes, even the flowers of the *tassel*, or racemose panicle at the summit of the culm, are so fully developed as to become *perfect*, and produce fruit.

fore they arrive at maturity, and when fully ripe yield copious nourishment, in many forms, both for man and beast; while the very *receptacles* of the seeds long considered as mere refuse, may be either ground with the grain as food for stock, or reserved as a convenient auxiliary fuel, in lighting up our anthracite fires. In Pennsylvania, and generally to the north, the *farina* of Indian corn is not extensively used by itself, in making *bread*,—probably for want of skill and usage: but whoever has experienced the hospitality of our fellow-citizens on the southern side of *Mason and Dixon's Line*, knows that *corn bread* is there admirably prepared and almost universally preferred to every other kind. The inhabitants of the west Indies, also, derive a large portion of their subsistence from our crops of Indian corn. It must be added, moreover, that a vast amount of this grain, in conjunction with rye, is converted by the distilleries into alcoholic poison, and its wholesome properties transmuted into the pestilent ministers to a depraved appetite. There are two other grain-bearing *grasses* yet to be noticed; each of which is so eminently valuable to the human race, that it is not easy to say which is entitled to the highest position in the scale of importance. It will of course be understood that I refer to wheat, (*Triticum sativum*, L.), and rice, (*Oryza sativa*, L.) In point of *intrinsic* value, I think there is no doubt that wheat may justly claim the precedence; but as rice is believed to afford sustenance to a larger portion of the human family, than any other grain, we may allow it, on this occasion, to take rank as the first among the *cerealia*, and therefore, according to our arrangement of the subject, the last to be treated of. Wheat however is clearly the most important of the grains in the temperate zones, especially in the higher latitudes. The Romans gave the name of *Frumentum*, to all the grains which furnish bread, and in England the same grains are designated by the name of *corn*; but these names were gradually, and by way of eminence, applied more particularly to *wheat*—as the great staple of bread stuffs. So the term *Froment*, is employed by the French, in a similar sense; and there was formerly a dish, made of wheat boiled in milk, which the English called *Furmenty*, or *Frumenty*; names evidently derived from the Latin word, *Frumentum*. Our colonial ancestors brought with them the English term, *corn*, as applicable to the European grains, and for the sake of distinction, they gave to the *maize*—which they found here—the name of *Indian corn*. In process of time, however, as the other grains had each a proper name, the generic term, *corn*, has come to be almost exclusively employed in the United States to designate the *maize*: and thus the word, like many others in our language, has by usage acquired a somewhat different meaning, on different sides of the Atlantic. I shall not trespass on your patience by enlarging on a subject so familiar to all, as is the value and importance of wheat. You are all aware, that in the greater portion of our happy country—especially in the middle and western states—it is one of the prominent objects of our agriculture. So long, therefore, as our people shall apply themselves to the tillage of the soil, we may reasonably hope to be exempted from that fearful calamity, a want of bread. In addition to the supply of food furnish-



ed by wheat,—I may remark, that our laundresses are chiefly indebted to its farina for that important article in their operations, known by the name of *starch*: and in the olden time—when, whatever may have been the interior condition of the head, fashion required the *exterior*, at least, to be conspicuously decorated,—the same amylaceous extract supplied the hair-dresser with his *powder*. As we have neglected the *external finish*, so elaborately bestowed on the pericranium, by our ancestors, it would seem to be but reasonable that we should give the more attention to the *furniture within!* Although capable of yielding alcohol—like all the farinaceous seeds—wheat is generally too valuable, as an article of food, to be desecrated by the process of distillation.

In our notice of the *cerealia*, the last in order—and, as is supposed, the first in importance, by reason of its extensive use,—is the rice plant (*Oryza sativa*, L.) The beautiful grain which this grass affords,—though considered by us, here, more as a delicacy than as a standing dish,—is the principal sustenance of millions of the human race. Being a kind of semi-aquatic plant, rice flourishes best in grounds that are low and marshy, or so situated that they can be overflowed—though there is a variety, called upland, or mountain rice, which is much cultivated: and every where, within the tropical, and adjacent regions, where circumstances are favorable to its culture, this admirable grass is to be found. In the southern parts of India, as I have had occasion to witness, the dense and squalid population is almost exclusively subsisted upon rice. The elegant preparations of this grain, which crown the tables of the wealthy in oriental climes, must be seen, and tasted, to be duly appreciated. It is also much used as food, in Roman catholic countries, in the time of Lent. This plant belongs to a small subdivision of the grass tribe, in which the *flowers* are often furnished with the extraordinary number of *six stamens*—or possibly they may each consist of *two florets* concentrated within the proper envelopes of a single flower, by which crowding process, all the parts of one of the florets, except the stamens, may be suppressed, or abortive; a phenomenon, of which it is believed there are many analogous instances in the economy of vegetation. The *seeds* are closely invested by the inner chaffy envelope, or *palea*, after the manner of oats and barley; and while thus coated are known in the east by the name of *padda*. They are deprived of this covering by passing them between millstones properly adjusted for the purpose, and are thus prepared for the culinary department, much in the same way that *hulled* and *pearl barley* are manufactured. The *albumen*, or farinaceous portion of rice, is of a remarkably pure white, almost translucent; and of a very bland, nutritious quality. The gluten which it contains, enables the Chinese to manufacture from it various ornamental articles of great beauty and delicacy. This gluten is also said to be an important ingredient in the preparation of *Japan paper*. The art of extracting alcohol from the *seeds*, has been applied to rice as well as to the other *cerealia*. The fiery liquor called *arrac*, the generic name in the east for alcohol, is obtained by distillation from rice, in conjunction with sugar, or the juice of some species of palm: and in China, an amber-colored wine is also made from that grain.

The last member of the gramineous tribe, which remains to be noticed on this occasion, is the sugar cane, (*Saccharum officinarum*, L.) This interesting plant more nearly resembles the Indian corn, in its structure and general habit,\* than any of the other grain-bearing grasses; but, unlike them all, its value consists, not in its seeds, but in the rich saccharine juice contained in its pithy stem. It is found only in warm climates, and flourishes best in the deep rich soils within the tropics, or in the lower latitudes of the temperate zones. It is propagated by cuttings of the jointed stem, planted in rows somewhat after the manner of Indian corn. The diameter of the culm does not much exceed that of good specimens of maize,—while it varies in height from 8 or 10 to 20 feet, according to the character of the soil. As it is not cultivated for its seeds, it is of course rarely permitted to flower; but is gathered while the rich juices are yet diffused throughout the stem. When these juices have acquired the proper degree of maturity, the culms are crushed between rollers,—the saccharine liquid is expressed—and conveyed into boilers, for the purpose of driving off, by evaporation, the redundant watery portion. This being done to the proper extent, and the impurities duly removed, the sugar is precipitated in crystals,—leaving a dark rich syrup above, which is familiarly known to us all by the name of *melasses*. These crystals, when separated and drained of the syrup, are left in various conditions of purity,—and constitute the different sorts of our common brown sugar. Subsequent boilings of the syrup afford a crude precipitate, of inferior quality, known in commerce by the name of *Muscovado* sugar,—a term corrupted from the Spanish word *Mascabado*,—and which, itself, is derived from the phrase, *mas acabado*—signifying *more done*, or finished:—i. e. the sugar, in this case, is the result of a further and concluding process.† Our *loaf sugar*, and *candies*, are obtained simply by refining the aforesaid saccharine crystals still further; viz. by dissolving them again—separating all foreign matters from the solution, by means of lime, alum, white of eggs, and other clarifying materials—and then reducing the purified liquid to the proper state for a second crystallization. Thus are we furnished, by this magnificent grass, with the purest, most nutritious, and universally palatable, of all the ingredients that enter into the composition of our food. The large portion of the globe adapted to the growth of the plant, and the copious product of its juices, render it probable that the *cane* will ever be our principal resource for the supply of sugar. The *maple* may furnish a tolerable substitute to foresters, who live remote from the channels of commerce,—and systems of policy, or other considerations, may induce a partial resort to the *beet*, to obtain this delicious and indispensable commodity:—

\* Although in the structure of the culm, and general external appearance, the sugar cane has some resemblance to Indian corn, the *botanical* characters of the inflorescence are more allied to those of *andropogon*, or what we denominate *Indian grass*; and hence it is arranged in the subdivision of the grasses, called *andropogoneae*.

† “*Mascabado*, adj. que se aplica al azucar inferior que sale de la última coadura.” *Diccionario de la Academia Española*.



but it may be doubted whether any, or even *all* the other species of the vegetable kingdom, can rival this single grass, in the production of sugar,—either in the quality, the quantity, or the cheapness of the supply. That the history of the plant and its products is closely interwoven with a melancholy tale of oppression, and human misery, is unhappily as true, as it is reproachful to our race; and it is no less true that the choice product of the cane—like that of its grain-bearing kindred—is often prostituted to the vilest and most mischievous uses: yet we must recollect, that these evils are the results of man's own folly and wickedness,—and are no more chargeable upon the blessings thus perverted, than they are imputable to the design of a bounteous Providence.

From the sketch now presented,—which I fear has been tedious, though extremely superficial and imperfect, I think it may be perceived, that the simple tribe of plants, technically called *grasses*, is not only one of the most abundant, but decidedly the most valuable, and important to man, of all the many natural families in the vegetable creation. That while its peculiar characters cannot fail to interest the lover of natural science, its uses, abuses, and manifold relations to the welfare of society, must ever give it a strong claim to the attention of the agriculturist, the philanthropist, and the political economist.

#### REMARKS ON DIFFERENT GRASSES FOR HAY AND PASTURE.

To the Editor of the Farmers' Register.

My crop of hay this year was composed of red clover, orchard grass, and green grass, separately grown. I have, for some time past, held red clover, for hay, in small estimation, and the experience of this year has increased its disfavor.

I finished cutting hay before the heavy rains in June, and had my hay cocked according to the method recommended in the first volume of the Farmers' Register, by raising the cocks on stakes. After the rains, I found that much of my clover hay had taken wet, and though I dried and housed it, as soon as I could, I sustained much loss. No injury was incurred by my orchard or green grass, though some of it remained out in cock for a month.

I am much pleased with my crop of green grass; it is the first I have seen cut, on the Eastern Shore, for hay; the season was not propitious, and the hay crop was not a full one. It is my purpose to improve the grounds on which it grew, to ascertain the product when compared with other grasses. I think there has been some suggestion in the Register about sowing and setting green grass, and perhaps it will be acceptable to your readers to know something of the production of green grass in my grounds. Some years ago I sowed a lot of seven acres in orchard grass, from which I cut crops regularly, and as the orchard grass has declined, the green grass has succeeded, and this year the green grass greatly predominated. The lot, preparatory to sowing it in orchard grass, was highly marled and manured, and has been since once top-dressed with barnyard manure. Mr. Stevenson informs us, that green grass (which he calls blue grass) delights

in the naturally calcareous soils of Kentucky. Dr. Darlington, that it grows in the lands of Chester county, on which lime has been freely used, and I think it is not assuming too much when I say that, by the same means, green grass may be produced on the Eastern Shore of Maryland. Indigenous grasses of equal production and quality are always to be preferred to exotic; there is no cost in seed or sowing, and, above all, we avoid the pernicious weeds which come in foreign grass seeds.

I was induced to cut red clover this year to obtain seed from the second crop. When judiciously used as pasture, it is certainly a great improver of the soil; whether white clover would not answer as a substitute is still a subject for experiment. Last year I cut wheat from a field which for the most part had been marled; I permitted no stock to run on it till the middle of October; it was then rich in white clover, and some red, from former sowing. The field was pastured till the month of December. The stock was then excluded till the middle of May, and it was a fine pasture till late in July, when it was greatly injured by a drought, uncommon here at that season of the year. I entertain no doubt that for pasture white clover is greatly superior to red; in confirmation of my own experience I rely on the opinions of some Chester county farmers, and I am inclined to think that if the same attention was paid to our native grasses and our native stock, we should find them as valuable as the recently imported. One of my friends sent me last fall two Berkshire pigs; I put them in a sty, and had them well attended to, and turned them out when the grass was in full growth; since, they have been fed with my other hogs, and are now fat. A gentleman, who professes to be a judge, saw them a few days since, and he thought some of my other hogs, the common breed of the country, both in size and condition quite equal to them. If our breeding cattle were well selected, and well reared, from the stock of the country, perhaps we should have but little need of imported stock.

I entertain no hope that Maryland can at present do any thing by way of agricultural experiments. The internal improvers and projectors have laid upon her a debt of \$15,000,000. Some of the schemes have proved abortive, and I apprehend time will develop more. The local authorities, by an act of the last legislature, are preparing to impose heavy taxes; whether there will be hereafter much alleviation, from the profits of rail-roads and canals, is a matter of doubt. Many of the improving companies are now issuing scrip to a large amount; and, upon their insolvency, it is probable Maryland will be called on to redeem it; and I suppose the meritorious consideration will be, that the money was expended on projects in which the state held a deep interest.

WM. CARMICHAEL.

Wye, Queen Ann's county, Md.,  
August 14th, 1841.

#### ON TURNIPS.

From Johnston's Lectures.

The raising of turnips is of such vast importance in the prevailing system of husbandry, that

any improvement in the mode of culture must be of extensive and immediate benefit. Experiments so numerous and so varied have been made with this view, that it may almost seem superfluous in me now to make any further suggestions on the subject. But when experiments have been made with a view to one object only, it often happens in all departments of natural science, that as new views are advanced or more precise methods pointed out, it becomes necessary to repeat all our former experiments—either for the purpose of testing the results they gave us, or of observing new phenomena to which our attention had not previously been directed.

1. Numerous experiments, for example, have been made upon the use of bones in the raising of turnips, but they have been chiefly directed to economical ends, and so far with the most satisfactory results. But among fifty intelligent and thinking practical men, and who all agree in regard to the profit to be derived from the use of bones with the turnip crop, how many will agree in regard to the mode in which they act—how few will be able to give a satisfactory reason for the opinion they entertain! The same is true of theoretical chemists, some attributing their effect more especially to the earthy matter, others to the gelatine they contain. Dry bones contain about two-thirds of their weight of earthy matter, the other third consisting chiefly of animal matter resembling glue. Of the earthy matter five-sixths consist of phosphates of lime and magnesia, and the rest chiefly of carbonate of lime. Thus a ton of bone dust will contain—

Animal matter	-	-	-	746 lbs.
Phosphates of lime, &c.	-	-	-	1245 lbs.
Carbonate of lime, &c.	-	-	-	249 lbs.

2240 lbs.

On which of these constituents does the efficacy of bones chiefly depend? Does it depend upon the animal matter?—This opinion is in accordance with the following facts:—

1°. That in the Doncaster report it is said to be most effectual on calcareous soils,—for in the presence of lime all organic matter more rapidly decomposes.

2°. That horn shavings are a more powerful manure than bones,—since horn contains only one or two per cent. of earthy matter.\*

3°. That before the introduction of crushed bones, the ashes of burned bones had been long employed to a small extent in agriculture, but have since fallen almost entirely into disuse.

4°. That old sheep skins cut up and laid in the drills, have been found to yield as good a crop of turnips and after-crop of corn, as the remainder of the field which was manured with bones.

5°. That "40 lbs. of bone dust are sufficient to supply three crops of wheat, clover, potatoes, turnips, &c., with phosphates,"† while a ton or a

ton and a half of bones, containing from 1200 to 1800 lbs. of phosphates, is the quantity usually applied to the land.

On the other hand, the quantity of animal matter present in a ton of bones (746 lbs.) is so small, and its decomposition so rapid during the growth of the turnips—while at the same time the effects of the bones are so lasting, and so beneficial to the after-crop of corn—that many persons hesitate in considering the great excess of phosphates applied to the land, as really without any share of influence in the production of the crops.

Thus Sprengel, an authority of the very highest character both in theoretical and practical agriculture, is persuaded that the phosphates are the sole fertilizing ingredients in bones; and he explains the want of success from the use of crushed bones in Mecklenburg and North Germany, on the supposition that the soil in those countries already contains a sufficient supply of phosphates, while in England generally they are deficient in these compounds.

Further, if the animal matter be the fertilizing agent in bones, why are they not of equal efficacy on grass land as upon turnips?

With the view, therefore, of leading to some rational explanation of the relative effects of the several constituents of bones, it would be desirable to institute comparative experiments of the following kinds:—

1°. With a ton of bones per acre.

2°. With seven or eight cwt. of horn shavings or glue per acre.

3°. With three cwt. of burned bones per acre.

4°. With thirteen cwt. of burned bones per acre.

The quantity of burned bones in No. 4 is that which is yielded by a ton of fresh bones; that in No. 3 is upward of five times what should be taken up by the crops—as great part of what is added must be supposed to remain in the soil, while *some must be dissolved and carried off by the rains.*

The results of such experiments as these, if made accurately on different soils, will lead us sooner to the truth than whole volumes of theoretical discussion.

II. Nitrate of soda has also been applied with great benefit in the culture of turnips. Some experiments, exceedingly favorable in an economical point of view, have been made by Mr. Barclay, of Eastwick Park, Surrey,\* who found that one cwt. per acre, drilled in with the seed, gave as great a return of Swedes as 15 bushels of bones with 15 of wood ashes per acre; and when the nitrate of soda was sown broadcast, from 20 to 25 per cent. more. In every part of the country, therefore, this substance ought to be tried. And as this nitrate is very soluble in water, and may therefore be readily carried off by the rain, and as only that which is within reach of the plant is of any avail, I would suggest that not more than one-fourth of the whole should be drilled in with the seed, for the purpose of *bringing away* the plant; and that after the thinning by the hoe, the rest should be strewn along the rows by the hand or by the drill. In this way the whole energy of the salt being expended where it is required, the greatest possible effect will be produced.

\* This, I believe, is rather a matter of opinion than the result of a sufficient number of actual trials. Some trials made by Mr. Hawden (British Husbandry, I., p. 395) gave results very unfavorable to horn shavings.

† Liebig, p. 84. The acre here spoken of is the Hessian, about three-fifths of the English acre. The English, therefore, will require 66 lbs.

III. I have already stated the reasons which lead me to anticipate highly beneficial effects to vegetation from the use of sulphate of soda; I would suggest, therefore, a trial of this salt on the turnips also, at the same rate of one cwt. per acre, and applied in the way above recommended for the nitrate of soda. Of course the intelligent farmer will vary the proportions and mode of application of these substances, as his leisure or convenience permit, or as his better judgment may suggest to him.

#### THE GREEN SWORD AND BLUE GRASS OF VIRGINIA.

To the Editor of the Farmers' Register.

Farmville, June 16, 1841.

Though I have not the pleasure of a personal acquaintance with you, I hope I shall be excused for the liberty taken of sending to you, for your inspection, specimens of blue grass and green sward; grasses which have recently, to a considerable degree, attracted the attention of your readers. Upon these grasses I have no learned remarks to offer. I will merely state that they are both good pasture grasses; the blue grass decidedly superior on account of its hardiness, its weight and richness. The green sward of Virginia may be the blue grass of Kentucky; but the blue grass of Virginia, as you see from the specimens, is very different from the green sward. The green sward is seldom, in Virginia, mowed for hay. It is too light for this purpose. In the Valley of Virginia, the blue grass is often mowed, and makes the best of hay. In the market it brings a higher price than any other hay. From a residence of several years in the Valley of Virginia, I had an opportunity of becoming acquainted with the facts above stated.

I will further state that the green sward runs to seed early, and in a short time matures its seed, after which the straw or stalks are, as you perceive in the specimen, very light and chaffy.

The blue grass, though equally early as pasture grass is later in running up and seeding, and retains its properties for hay to a very late period in the hay-making season. It affords a good and heavy swath, and well repays the husbandman.

It is due to you, sir, that I give you my name, and this I do without reluctance, as my hasty remarks are not designed for publication. Very respectfully yours,  
J. H. C. LEACH.

As we do not understand our correspondent as forbidding the publication of his letter, and as there is certainly no other reason why it should not be published, we have taken the liberty to do so, although he had not so intended.

Not having any botanical knowledge, and not being accustomed to distinguish any grasses except as they are seen growing, we preferred to wait and submit these dried specimens to a friend who is much better informed. The one grass, of which only we had any doubt, is the *poa compressa*, or blue grass of Virginia and Pennsylvania, and the

other the *poa pratensis*, or green sward of Virginia and blue grass of Kentucky. Of course they are correctly characterized by our correspondent, according to the vulgar names of Virginia.

These specimens are of uncommon size for eastern Virginia. One of the green sward stalks we found by accurate measurement to be very nearly 2 feet 8 inches above the ground; and a stalk of blue grass to be nearly 2 feet 4 inches. They wanted less than a quarter inch of these precise lengths. Now if these grasses had been described as of such size, without exhibiting the actual specimens, few persons would have recognized them as the same grasses which are generally seen of so much smaller growth. Many of us are thus frequently misled even by the most accurate descriptions of plants, when the greatest heights are mentioned, as these so much exceed the ordinary and generally observed sizes. Of this, a remarkable case recently fell under our own observation. If 100 different farmers were separately asked what was the tallest sheep sorrel that they had seen, it is probable that very few would name a size more than a foot, and not one exceeding 18 inches. Yet we pulled and measured a bunch this summer, of remarkably luxuriant growth, of which the highest seed stem was 3 feet 4 inches above the ground—which we should be almost afraid to tell, except that we had a witness to the measurement. Now if any one were to describe this plant as growing sometimes above 3 feet high, it would cause every reader to pronounce at once that it could not possibly be the usually diminutive but powerful weed which is such a pest on acid soils.—ED. F. R.

#### ON THE CONSTRUCTION OF ICE HOUSES.

From the Kentucky Farmer.

Lexington, Aug. 9, 1841.

Dear sir: The desire to contribute my mite, however small, to the support of your valuable paper, prompts me to send you the following remarks on the construction of ice houses; which, however, I beg you not to publish unless you think they are worth the space they would occupy in your columns.

The principles which should be kept in view in the construction of houses for the preservation of ice, are few and simple. The sole object of the structure being to prevent the passage of *caloric*,\* from the earth, the air or the sun, to the ice; for if we could completely prevent the passage of that

\* A definite term employed to designate the cause of the sensation called heat; which latter word is applied, in common parlance, both to the cause and to the sensation, leading sometimes to ambiguity.

agent into the ice, it would retain its solid form for any length of time.

The temperature of ice, when at its melting point, is 32°, Fahrenheit; in order that it may melt into water, it must absorb 140 degrees of caloric, sufficient to raise its temperature to 172 deg. but which only changes its form, from solid to liquid, without rendering it any warmer than it was before. The water draining from the melting ice being always at the same temperature with the ice itself. Without the accession of these 140 degrees of caloric, therefore, ice would never be melted into water.

Could we construct a house of materials that were perfect non-conductors of caloric, the preservation of ice contained in it would be complete. As, however, we have no perfect non-conductors we must select for our purpose those substances which conduct most slowly. The materials which experience has selected for articles of clothing, to preserve the natural temperature of our bodies, stand at the head of the list of these substances, and would also be the very best that could be used to protect ice from the surrounding caloric, were they not too dear and too perishable in their nature. As these, however, cannot be employed, for this reason, except in preserving small quantities for immediate use, we are obliged to resort to others less perfect but cheaper and more indestructible. Among these are the following, which I have placed in the order of their relative resistance to the passage of caloric, as determined by Count Rumford and others; those which oppose the greatest obstruction to its passage being placed first; viz:

Charcoal of light wood,  
Dry wood ashes,  
Tan bark,  
Wood,  
Sand,  
Bricks,  
Porous earth,  
Porous rocks,  
Dense rocks,

According to our data, one of the best modes of forming the walls of an ice house would be to make a frame work of timbers, say from 6 to 12 inches thick, to board it up on both sides of the timbers and fill the spaces between the boards with powdered-charcoal, dry wood ashes tan bark or saw dust; the floor and covering of the structure being protected in the same manner; and on filling it with ice a considerable thickness of straw should be placed at the bottom, sides, and top.

Where these materials are not easily to be obtained, logs of wood, built up in the pit, like a log cabin, make a very good substitute; more especially if filled on the outside, next the earth, with charcoal, ashes, saw dust, or tan bark. For this purpose charcoal and ashes are preferable to saw dust and tan bark, in consequence of their indestructibility.

Bricks and stones, although often employed in the construction of ice houses, are less proper than wood, unless lined on the outside with a sufficient thickness of charcoal, ashes, or other imperfect conductors.

Ice houses are frequently made, partly above and partly below the general surface of the ground; the top being arched over and the earth which was dug from the pit being thrown on the

top of the structure in the form of a mound. This is a very good form, provided all the sides are protected, by non-conductors, from the caloric of the soil. The caloric of the sun's rays, absorbed by the surface of the porous earth in summer, passes through it with considerable difficulty, and travels slowly to the interior; passing off again in part, by the same slow process back to the surface to be dissipated during the cold of winter. In consequence of the difficulty with which it penetrates porous earthy matters, the daily changes of temperature cannot be observed at a greater depth than 3 or 4 feet, and the great annual vicissitudes are entirely lost before they descend 100 feet below the surface. The earth's surface, therefore, does not become heated or cooled rapidly to any considerable depth, and deep caves and excavations in the earth, preserve a scarcely varying temperature, which approaches that of the *mean temperature* of the region. This is the temperature of the water of deep wells, or of springs rising from some depth, which by comparison appears cold in summer and warm in winter. The *mean temperature* of this region is somewhere between 52 and 56 degrees, Fah.; twenty or twenty-four degrees about the melting point of ice; so that there is always caloric enough in the soil, below the surface, to melt ice, even during the winter season, and deep ice houses, whether covered or not with a mound of earth, hence require the protection of walls of non-conducting materials.

One of the most common causes of the rapid melting of ice in ice houses, is the want of sufficient drainage. If the water which drops from the ice or sinks from the surface of the soil, cannot drain away, but remains at the bottom of the house in contact with the ice, it serves as a medium through which the caloric of the earth passes with facility, causing the rapid melting and sinking of the ice. At the bottom of every ice house, therefore, if it is not in a very sandy soil, there should be a well of sufficient magnitude, or the floor should be raised to such a height above the earth as to prevent the water from ever coming in contact with the ice. Decomposition, and the formation of mephitic gases, as suggested by one of your correspondents, cannot take place under these circumstances: the most fermentable liquids do not begin their fermentation until their temperature is raised above 32 deg. which is that of the water dripping from ice.

Those houses which are not covered with a mound of earth, should have a good roof, or what is better, a tight room built over them, to prevent the circulation of air as much as possible, and the roof and sides should be rendered as nearly proof against the passage of caloric as straw, or other substances of the kind, fixed on the inside, as stated by Mr. Mentelle, can make them, and to prevent as much as possible the absorption of the caloric of the sun's rays, the whole exterior, roof and all, should be well whitewashed; it being a well established fact that much less is absorbed by a white surface than by a black one.

A great deal may be gained in the preservation of ice, by putting it up during the very coldest weather. For example, if ice be cut and exposed for a sufficient time to the air, when the thermometer is at zero, and packed away at that temperature, it must become heated up to its melting

point, 32 degrees above zero, before a particle of it will liquefy. But if packed in the house on a mild day, when in a thawing condition, it being already heated up to its melting point, the first degree of caloric that passes into it melts a portion. It has been already stated that 140 degrees are necessary to the liquefaction of ice, and it will be seen, therefore, that 140 pounds of ice, put up at the temperature of zero, is equivalent to 172 pounds which is packed in a melting condition.

The form of an ice house is by no means a matter of indifference. That which presents the smallest external surface is theoretically the best; therefore, other things being equal, a globular form would be the most proper. This, however, is not a convenient one to construct and hence the truncated cone, or square, are those most frequently adopted, and answer sufficiently well. The worst possible form would be a long narrow one.

ROBT. PETER.

#### WHEAT STRAW FOR IRISH POTATOES.

From the Kentucky Cultivator.

The best use I have ever made of wheat straw, and I think it the most profitable use that can probably be made of it, is as follows: and although this way of using it is not new, yet many have not tried it.

The ground being well broke up, run it off in rows of the usual width, just sufficiently deep to cover the Irish potatoes; plant them as usual, and cover them. Now cover the ground with straw about three feet deep, and if the straw will not hold out to cover them all this deep, the deficiency may be made up with leaves. In this way the potatoes may be planted very early. It is known that when potatoes are bitten by frost, they never do well. In this way, however early they are planted, they will seldom come through the straw before the danger of the frost is over. If they should, however, all that is necessary is to cover them over as they come out with more straw or leaves; the ground being covered three feet with straw, a kind of hot or forcing bed is produced, and although the tops do not come through the straw, yet they are growing finely a long time before they would grow if planted in the common way. Once planted, they require no working or further trouble; the produce is astonishing; those who have not tried could not believe that such a bountiful crop could be made with so little labor. They can be taken away as required, there being no danger of their remaining as they are till planting time, perfectly sound. I have noticed, in taking up a whole square of them to plant, that I did not see one unsound potato. It is a common opinion that potatoes will not do well unless the planting potatoes are brought from the north. Seed potatoes planted in the common way I have no experience of, but if planted and saved as directed above, we can make and save as good potatoes at home, either for planting or eating, as any part of the world can. Many believe that whole potatoes do better when planted than cut potatoes. I have tried this several times, both planted as usual and with straw. I have planted one row with the largest whole ones I could find,

and another row of potatoes cut very small; the tops of the whole potato will grow very large, but I never could distinguish much if any difference in the produce. I have thought the rows of cut potatoes best, but the difference was so small that I do not feel certain. It matters not how close the tops of plants are, so the roots have sufficient distance.

Now although we have, by thus employing our wheat straw, made the largest crop of potatoes with the least labor, yet we have only got part of the benefit to be derived from the straw. When all the potatoes are removed, if all the straw was also taken away, the ground, from being so long covered, will be found rich. The quantity of straw on the ground, after taking up the potatoes, is so great that it cannot be ploughed; one half or more should be carted away, this might be used to cover another crop of potatoes, or put in the manure lot; now sow some corn on the ground and turn in the flock of hogs. They will, in searching for the potatoes and corn on the ground, root up the straw and earth and mix them together, so that the plough will go through it without difficulty; this planted in corn will make such a crop as will fully pay for all the labor. The best corn I have ever made was thus produced. But, alas! all the ground receives from this management this one crop of corn takes away; the next year, when planted in corn, the produce is little better than common. But how shall we make a better disposition of our straw? In the first place we get a most bountiful crop of potatoes without the trouble of working them; we then take away sufficient straw to cover nearly half as many potatoes for another crop, and then the ground put in corn will make a splendid crop.

ROBERT R. HARDEN.

Clarke, Ga.

[When residing in the country, we raised our small crops of potatoes for the table on the general principle of the plan above mentioned, that is, by covering with straw, or pine leaves, and using no tillage after the ground had been well broken at first, and the potatoes planted. We preferred pine leaves to straw, not only for being cheaper, but because being poorer and less putrescent, they lasted longer unrotted, and therefore operated better mechanically. But we never covered as deeply as three feet, nor perhaps more than a foot at one time, and therein we doubtless erred. This plan was also described from practice, and recommended by a correspondent at page 214, vol. I. of Farmers' Register. Our own practice was only for the few last years of our residence in the country. The products were never ascertained by actual measurement, being mostly consumed at table while growing, or remaining in the ground; but no question existed of the superiority of both the quantity and quality of the crop, and of the greater cheapness of the mode of culture.

For the first commencement, the seed potatoes

may be planted and covered with earth very slightly, (and perhaps no such covering is necessary,) on well broke ground, at any time from November to March, for the early crop; and then cover the whole thickly with straw, pine leaves, or any such open material. (Might not saw-dust answer well, where obtained in plenty from a saw-mill?) Nothing more is needed until the largest potatoes are fit to be eaten. Then, instead of having to dig them, and to waste the smaller to get a few of the largest, the litter may be gently lifted, and each cluster of potatoes be seen and handled, and the largest plucked from the stalk, leaving the smaller undisturbed to grow. Each cluster will be found above the ground, and appearing like a bunch of grapes.

For the second crop, when removing the first in October, no preparation was made except to leave in place, as seed, enough of the smaller potatoes. The earth was so soft and mellow as to need no breaking. The old litter was replaced as each row was gathered and again planted, and enough of additional litter added afterwards. Even when it was designed to remove all the crop, and to change the planting ground to another place, so many plants sprang up through the litter next spring, from the many small tubers left by carelessness or accident, as to produce a middling crop in quantity, (it being too thin set,) and of roots much earlier and larger than the new and designed planting. Indeed there might be thus kept a perpetual potato patch, with very little planting, no culture, and no subsequent manuring other than the leaves, but for one objection, which will usually be found to be serious to the third successive crop. This is, that the field mice, and other such vermin, will have so increased in the excellent and safe quarters furnished to them by the litter, that the crop will be much injured by their depredations.

This plan must be better for southern than for more northern regions, as the thick cover of leaves preserves both more moisture and a much cooler temperature in the heat of summer; both of which are so necessary to the best condition of the Irish potato crop.—ED. F. R.

#### VATS FOR WATER ROTTING HEMP—THE IMPORTANCE OF THE BUSINESS.

From the Kentucky Farmer.

Lexington, Aug. 9th, 1841.

Dear sir:—I beg leave to lay before you a few suggestions relative to the promotion of the great object I have in hand—the water rotting of hemp.

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Those farmers who have not the convenience of water in small spring branches, streams or ponds, can obviate the difficulty by constructing vats made out of plank, at a respectful distance from their dwellings. Let them make two vats, say 20 by 40 feet and leave an incline, that when the hemp has undergone its solution in the upper the water can be let into the lower. By this means one vat of water will rot three vats full of hemp.

To obtain the water to these vats I would recommend a small lifting pump which has been invented by Mr. Warner of this city; also a pump that is manufactured in Cincinnati, which the firm of Messrs. Dudley have on Main street. Either will answer the purpose to draw the water out of a well or a spring and convey it to the vats by small wooden troughs.

A farmer having fifty acres of hemp, can with ease, and with no interference, water rot say one half of his crop, the largest of his hemp, and dew rot the balance, which will increase the amount of his crop of hemp in value 33½ per cent. For instance, a crop of hemp of fifty acres averaging 600 pounds to the acre, dew rotted, at \$5 per 112 lbs. will amount to \$1900. The same crop one half water rotted, will amount to \$1900. This can be done with little trouble, and divide their business in the preparation of their hemp crop, and will bring their staple earlier to market, which will also produce them an established price, and enhance the value of their lands.

These small pumps can be obtained with a proportion of hose to them, for \$75. The cost of this is trifling in comparison to the gain of water rotting.

The hemp grower not only gains by the advance in price, but he has many advantages. His hemp before the spring is open, is out of his way, and delivered, and he is prepared to attend to the necessary arrangements of his farm; such as repairing his fences, and many other matters, which from my observation, as I pass through the farms, are very necessary.

A farmer can prepare for water rotting a crop of hemp upon the plan I describe, and it will not cost more than \$125 including pump. This is for the first year. The second, the cost is nothing, and with two hands this quantity can be rotted by commencing the first of September. After it is rotted, (which will be about the middle of October) by the first of December, with additional hands for breaking, he has his hemp delivered and is in possession of its value. What an important matter this is to the farmer. If they would enter into it with spirit, there will be always a steady market at not less than \$9.00, as the amount required for our navy and commercial enterprise is about 12,000 tons yearly. Independent of this, it will cause eastern capitalists to embark in the enterprise of establishing factories for the manufacture of sail cloth, &c.

I submit this to the hemp growers' consideration, and trust it will encourage them to prompt action in the promotion of this great national object; viewing it not only as promoting national independence but as a means of domestic independence to the present and future generations.

DAVID MYERLE.

# PARTICULARS RELATIVE TO WATER ROTTING HEMP.

From the Flemingsburg Kentuckian.

After cutting young hemp let it be tied in small bundles with two bands, one at the butts and the other at the tops. Rye straw for bands is preferable.

Allow your hemp to lay two or three days for drying, if the weather is favorable, before putting into the pools, say a sufficient time to beat the leaves off.

Select all the large hemp by itself, it will produce a more regular rot. I recommend the short or that under five feet to be dew rotted, for bagging purposes.

Avoid getting your hemp wet with rain. If your pools will not receive your whole crop, haul it near your pools and have it stacked.

Place your hemp in the pools carefully, but and tops to the height of your pool; lay small plank and weight it with rock or timber, then let your water in.

To ascertain when your hemp has a sufficient rot rub your hand on the surface of the stalk, and if the roughness has left, it may be taken out.

When rotted, spread it carefully upon the ground, turning it, and when perfectly dry place it in shocks or ricks. It is then ready for breaking at any time. A temporary shed near the ricks would be found a great convenience, as the hands could break out all weather; cracking it in wet weather and cleaning it in dry.

Do not apply your brake too frequently to the hemp, but shake it. By beating it too much it produces tow.

DAVID MYERLE.

# OF ATMOSPHERICAL MOISTURE AND TEMPERATURE.\*

From Lindley's Horticulture.

The constituent parts of the atmosphere that surrounds us are either the same in different regions, or the differences, if any, are not appreciable by chemical processes. It is far otherwise as regards temperature and humidity, which are so intimately connected that they cannot be considered apart from each other.

From what has been already stated it is apparent that of the vital functions of plants none are more important than those of perspiration and evaporation; and that, while a certain amount of loss of their fluid particles is necessary, a great excess or diminution of the loss must be injurious. Although the solar rays appear to be the immediate cause of perspiration, which proceeds in proportion to their intensity, yet this action is necessarily modified by the state of the medium, that is, of the atmosphere, which surrounds them: in proportion to its heat

and dryness will their power be augmented, and in proportion to its cold and moisture diminished. The physiological effect of an excessive augmentation of perspiration is to dry up the juices and to destroy the texture of the leaves; on the other hand, an excessive obstruction of that function prevents the decomposition and assimilation of the fluids, and the formation of new organised matter, as well as of the secretions peculiar to a species. A state of the atmosphere, therefore, which is most favorable to the maintenance of the perspiratory action in the most healthy state, is that which it must be the business of a gardener to secure by all the means in his power.

Among the hygrometers intended for measuring the quantity of elastic vapor in the atmosphere, the most convenient for use is that invented by Professor Daniell. In this instrument, the amount of moisture in a given atmosphere is indicated by what is called the *dew-point*; that is to say, by the point of the thermometric scale at which the cold is sufficient to cause a deposition of dew; the amount being calculated by the difference between the natural temperature and an artificial temperature created for the purpose of determining the point at which the elastic vapor of the air is precipitated by cold. "The natural scale of the hygrometer," says Mr. Daniell, "is included between the points of perfect dryness and perfect moisture; the latter, of course, being that state of the atmosphere at which the *dew-point* coincides with the temperature of the air. The intermediate degrees may be ascertained by dividing the elasticity of vapor at the temperature of the *dew-point*, by the elasticity at the temperature of the air: the quotient will express the proportion of moisture actually existing to the quantity which would be required for saturation; for, calling the term of saturation 1.000, as the elasticity of vapor at the temperature of the air is to the elasticity of vapor at the temperature of the *dew-point*, so is the term of saturation to the actual degree of moisture."

By means of this and similar contrivances,\* we are at all times able to ascertain exactly the quantity of water that exists in an elastic state in the air.

In this country, the changes of moisture are said to extend from 1.000, or saturation, to .389, or even so low as .120, under a south wall, for a short space of time; "a state of dryness which is certainly not surpassed by an African harmattan," but one which produces less disastrous consequences, because it is accompanied by a far lower temperature and a weaker solar radiation. The mean degree of moisture of the air near London has been found by Mr. Thompson to be .897, on an average of ten years, while the mean temperature is 50.62:† in other parts of the world it is very different; and the amount of those differences, together with the means of imitating them artificially, constitutes one of the most delicate and difficult parts of the gardener's art. All that relates to this subject, however, to be treated use-

\* This subject has already been fully treated by Professor Daniell, in his excellent paper, "On Climate with regard to Horticulture," published in the *Transactions of the Horticultural Society*, vol. vi. p. 1. It is impossible for any one to discuss the same topic without profiting largely by this important treatise, which I have very much followed in the present chapter.

\* Other hygrometers have been invented to answer the same end; but, as Mr. Daniell's is that most eligible in this country, I have thought it more convenient to confine my observations to it.

† See the various meteorological journals published by the Horticultural Society, in their *Transactions*, from the year 1826 inclusive.

fully, must be considered in a very special way, and in such detail as can only be expected in a separate work upon the subject. An idea of the difference between the atmospherical moisture of London and that of other parts of the world may, however, be collected from the following table, showing the amount of rain that falls in a few different countries :

	Inches per annum.
London . . . . .	24.01 average of 10 years.
St. Petersburg . . . . .	16.
Algiers . . . . .	27.
Fatthepur (E. Indies) . . . . .	85.94 average of 4 years.
Madeira . . . . .	81.
Sagar (E. Indies) . . . . .	from 81.15 to 64.76
Bahamas . . . . .	54.99
Calcutta . . . . .	from 59.88 to 81.
Ceylon . . . . .	84.3
Macao . . . . .	from 48.8 to 107.3
Equator . . . . .	96.
Coast of Malabar . . . . .	123.50 average of 14 years.
Grenada . . . . .	126.
Leogane, St. Domingo . . . . .	150.
Bengal, 20 to 22 inches in a single month.	

Bombay, 32 inches in 12 days.

Tavoy, 203.5 inches in six months ; as much as 8.5 in a day (July 81, 1831.)\*

We possess, to a certain extent, the power of modifying the moisture of the air even in the open air, and have almost complete control over that of glazed houses.

It is found by experience that the effect of wind is to increase the dryness of the air, and, consequently, the perspiration of vegetable surfaces. "Evaporation," says Mr. Daniell, "increases in a prodigiously rapid ratio with the velocity of the wind ; and any thing which retards the motion of the latter is very efficacious in diminishing the amount of the former. The same surface which, in a calm state of the air, would exhale 100 parts of moisture, would yield 125 in a moderate breeze, and 150 in a high wind." Hence the great importance, in gardens, of walls and screens, which break the wind, and keep the air in repose in their vicinity. The difference between the effect of a given amount of cold upon the blossoms of exposed fruit trees, and those of the same species trained upon walls, is well known ; and appears to be owing to this circumstance much more than to any difference of temperature in the two situations.†

It is to be remarked that the easterly winds are, in this country, both the coldest and the driest.

\* [The average fall of rain (and snow) in the state of New York, for 14 years (1826—1839 inclusive, (as deduced from observations made under the direction of the regents of the University, and collected in their Report, presented March, 1840, is 34.40 inches. The highest average (from 54 stations) for any single year is 44.40 (A. D. 1827) ; the lowest (for 1839) 32.10 inches. A. G.]

† This has been illustrated by Mr. Howard, in the results of some interesting experiments made by him on the annual amount of evaporation. During three years, in which the evaporating gauge was placed forty-three feet from the ground, the annual average result was 37.85 inches ; during other three years when the instrument was lower and less exposed, the average was 33.37 inches ; and when the gauge was upon or near the ground, the annual average was only 20.28 inches, or little more than half the amount evaporated in a free and elevated exposure.

Mr. Daniell tells us that the "moisture of the air flowing from any point between  $\pi$ .  $\pi$ . and  $\pi$ .  $\pi$ . inclusive, is, to that of the air from the other quarters of the compass, in the proportion of .814 to .907, upon an average of the whole year ;" and Mr. Thompson has found the hygrometer to indicate not uncommonly from  $20^{\circ}$  to  $80^{\circ}$  of dryness, during the long prevalence of the north-easterly winds in spring. At the same time, the air is very cold, the effect of which is to cause the sap-vessels of the stem to contract, and refuse to convey their fluid ; so that the blossoms of fruit trees in a north-east wind, while they are robbed of their fluid contents by evaporation, can get no assistance from the roots through the stem, and necessarily perish. I find, however, from Mr. Thompson's observations, that the greatest dryness we experience in this climate is not when the wind is in the east, but when it is in the south. For example : in nine years, between 1826 and 1834, the four driest days were, in the year 1834, in June, when it was  $33^{\circ}$  on the 1st,  $35^{\circ}$  on the 2d, and  $31^{\circ}$  on the 21st ; on the 1st of June, 1833, it was  $30^{\circ}$ , and always with a south wind ; and, during the whole of those nine years, there was but one other day on which the dryness was found as high as  $30^{\circ}$ , namely, on the 10th of April, 1834, with a north-east wind. The duration of dryness with a south wind was, however, very short, not exceeding one or at most two days, and was invariably accompanied with great heat and followed by heavy rain ; while the north-easters last for weeks, without rain and with a comparatively low temperature. The following statement by Mr. Thompson puts this in a clear light. There occurred between 1826 and 1834 inclusive,—

Wind North . . . . .	7 days above $20^{\circ}$ of dryness.
N. East . . . . .	89 do. do.
East . . . . .	114 48 do. do.
S. East . . . . .	27 do. do.
South . . . . .	35 do. do.
S. West . . . . .	80 do. do.
West . . . . .	35 do. do.
N. West . . . . .	22 do. do.

These facts sufficiently explain the fatal effects of certain winds upon vegetation, the small comparative value in this country of walls with north and east aspects, and the general want of success that attends late spring planting. Here, also we in part discover an explanation of the utility of shades interposed between the sun and plants newly committed to the earth ; they not only cut off the solar rays, but also intercept currents of air, and thus diminish the amount of perspiration by two opposite methods.

As to temperature in the open air, unconnected with atmospherical humidity, there seems to be no means of regulating or modifying it to any considerable extent. In some respects, however, we have even this powerful agent under our control ; but, in order to exercise such control, it is necessary to understand correctly the theory of what is called radiation, which cannot be better explained than in the words of Mr. Daniell. "The power of emitting heat in straight lines in every direction, independently of contact, may be regarded as a property common to all matter ; but differing in degree in different kinds of matter. Co-existing with it, in the same degrees, may



be regarded the power of absorbing heat so emitted from other bodies. Polished metals and the fibres of vegetables may be considered as placed at the two extremities of the scale upon which these properties in different substances may be measured. If a body be so situated that it may receive just as much radiant heat as itself projects, its temperature remains the same; if the surrounding bodies emit heat of greater intensity than the same body, its temperature rises, till the quantity which it receives exactly balances its expenditure, at which point it again becomes stationary; and if the power of radiation be exerted under circumstances which prevent a return, the temperature of the body declines. Thus, if a thermometer be placed in the focus of a concave metallic mirror, and turned towards any clear portion of the sky, at any period of the day, it will fall many degrees below the temperature of another thermometer placed near it, out of the mirror; the power of radiation is exerted in both thermometers, but to the first all return of radiant heat is cut off, while the other receives as much from the surrounding bodies, as itself projects. This interchange amongst bodies takes place in transparent *media* as well as in *vacuo*; but in the former case, the effect is modified by the equalizing power of the medium.

"Any portion of the surface of the globe which is fully turned towards the sun receives more radiant heat than it projects, and becomes heated; but when, by the revolution of the axis, this portion is turned from the source of heat, the radiation into space still continues, and, being uncompensated, the temperature declines. In consequence of the different degrees in which different bodies possess this power of radiation, two contiguous portions of the system of the earth will become of different temperatures; and if on a clear night we place a thermometer upon a grass-plot, and another upon a gravel walk or the bare soil, we shall find the temperature of the former many degrees below that of the latter. The fibrous texture of the grass is favorable to the emission of the heat, but the dense surface of the gravel seems to retain and fix it. But this unequal effect will only be perceived when the atmosphere is unclouded, and a free passage is open into space; for even a light mist will arrest the radiant matter in its course, and return as much to the radiating body as it emits. The intervention of more substantial obstacles will of course equally prevent the result, and the balance of temperature will not be disturbed in any substance which is not placed in the clear aspect of the sky. A portion of a grass-plot under the protection of a tree or hedge, will generally be found, on a clear night, to be eight or ten degrees warmer than surrounding unsheltered parts; and it is well known to gardeners, that less dew and frost are to be found in such situations, than in those which are wholly exposed." (*Hort. Trans.*, vi. 8.)

These laws plainly direct us to the means we are to employ to moderate atmospherical temperature. A screen, of whatever kind, interposed between the sun and a plant, intercepts the radiant heat of the sun, and returns it into space; and thus, in addition to the diminution of perspiration by the removal of a part of the stimulus that causes it, actually tends to lower the temperature that

surrounds the plant. In like manner, the interposition of a screen, however slight, between a plant and the sky, intercepts the radiant heat of the earth; and, instead of allowing it to pass off into space, returns it to the ground, the temperature of which is maintained at a higher point than it otherwise would be. Hence it is that plants growing below the deep projecting leaves of houses, or guarded by a mere coping of thatched hurdles, suffer less in winter than if they were fully exposed to the sky.

It is also obvious from what has been stated, that plants growing upon grass will be exposed to a greater degree of cold in winter than such as grow upon gravel: but it does not therefore follow that hard gravel is, with respect to vegetation, a better coating for the surface of the ground than turf; it has its disadvantages as well as its advantages, and the former probably outweigh the latter. Its superior heating power is its only advantage; the objections to it are, its dryness in summer, and its comparative impermeability to rain, so that it causes the force of perspiration to be inversely as the absorbing power of the roots.

It is well known that blackened surfaces absorb heat much more than those of any other color; and it has been expected that the effect of blackening garden walls, on which fruit trees are trained would be to accelerate the maturation of the fruit: but, notwithstanding a few cases of apparent advantages, one of which, of the vine, is mentioned in the *Horticultural Transactions*, vol. iii. p. 330, this has been, in general, found either not to happen at all, or to so small an extent as not to be worth the trouble. It is true that so long as the wall is but little covered by the branches and leaves of a plant, the absorbent power of the blackened surface is brought into play; but this effect is lost as soon as the wall becomes covered with foliage. In the early spring, however, before the leaves appear, the flowers are brought rather more forward than would otherwise be the case; and in the autumn the wood certainly becomes more completely ripened, a result of infinite consequence in the northern parts of the country.

It is rather to a judicious choice of soil and situation that the gardener must look for the means of softening the rigor of climate. Wet tenacious soils are found the most difficult to heat or to drain, and they will, therefore, be the most unfavorable to the operations of the gardener; extremely light sandy soils, on the other hand, part with their moisture so rapidly, and absorb so much heat, that they are equally unfavorable; and it is the light loamy soils, which are intermediate between the two extremes, that, as is well known, form the best soil for a garden. Situation is, however, of much more consequence than soil, for the latter may be changed or improved, but a bad (that is, cold) situation is incurable. Cold air is heavier than warm air, and, consequently, the stratum of the atmosphere next the soil will be in general colder than those above it. When, therefore, a garden is placed upon the level ground of the bottom of a valley, whatever cold air is formed upon its surface remains there, and surrounds the herbage; and, moreover, the cold air that is formed upon the sides of low hills rolls down into the valley as quickly as it is formed. Hence the fact which to many seems surprising, that what are called sheltered places are, in spring and autumn,

the coldest. We all know that the dahlias, potatoes, and kidney-beans of the sheltered gardens in the valley of the Thames, are killed in the autumn by frosts whose effects are unfelt on the low hills of Surrey and Middlesex.\* Mr Daniell says he has seen a difference of 30°, on the same night between two thermometers, placed the one in a valley, and the other on a gentle eminence, in favor of the latter. Hence, he justly observes, the advantages of placing a garden upon a gentle slope must be apparent; "a running stream at its foot would secure the further benefit of a contiguous surface not liable to refrigeration, and would prevent any injurious stagnation of the air."

In addition to this, it has been said that, to obtain the most favorable conditions of climate in this country, a garden should have a south-eastern exposure. This, however, has been recommended, I think, without full consideration. It is true that in such an exposure the early sunbeams will be received; but, on the other hand vegetation there would be exposed to several unfavorable actions. There would be little protection from easterly winds, which, whether south-east or north-east, are the coldest and driest that blow: in the next place, an exposure to the first sun of the morning is very prejudicial to garden productions that have been frozen by the radiation of the night; it produces a sudden thaw, which, as gardeners well know,† causes the death of plants which, if slowly thawed, would sustain no inconvenience from the low temperature to which they had been exposed.‡ It is probable, as I have

elsewhere endeavored to show, that this singular effect may be accounted for as follows:—"In such cases, it may be supposed that the air, forced into parts not intended to contain it, is expanded violently, and thus increases the disturbance already produced by its expulsion from the proper air cavities; while, on the other hand, when the thaw is gradual, the air may retreat by degrees from its new situation without producing additional derangement of the tissue. It is also possible that leaves from which their natural air has been expelled by the act of freezing, may, from that circumstance, have their tissue too little protected from the evaporating force of the solar rays, which, we know, produce a specific stimulus of a powerful kind upon those organs." (*Hort. Trans.*, n. s., ii. 305.)

In our glazed houses, we have full control over the state of the atmosphere, as regards both its moisture and temperature, by means familiar to every gardener; but the manner of applying those means, and the causes that oppose their action, deserve to be the subject of inquiry.

It will have been seen, from what has been already stated upon that subject, that in general, in warm countries, the air is occasionally at least, if not permanently, filled with vapor to a much greater extent than in northern latitudes\*, and, as in our glazed houses, we cultivate exclusively the natives of warm countries, it is also obvious that, as a general rule, the air of such houses requires, at certain periods, to be damper than that of the external air. Those periods are when vegetation is most active. On the other hand, countries nearer the equator are subject to seasons of dryness, the continuance of which is often much greater than any thing we know of here in the open air, and consequently artificial means must also be adopted to bring about, in glazed houses, that state of things at particular periods; namely, those of the repose of plants. These facts afford abundant proof of the necessity of regulating the moisture of the atmosphere with due precision.

By throwing water upon the pavement of glass houses, by means of open tanks of water, by reservoirs placed upon them by syringing, and by other contrivances†, the quantity of water in the air may be easily increased even up to the state of saturation. But there are some circumstances, easily overlooked, which interfere very seriously with this power, and which, it may be conceived,

sun, or prevent sudden variations of temperature. For the same reason, orchards of peach trees in the middle states, on the cold north sides of hills, are often more vigorous and of greater longevity than those in a full southern aspect: the heat of our summers being sufficient to ripen their fruit and wood in such situations, while they are thus secured from the evils of great and sudden changes of temperature in winter. A. J. D.]

\* "Captain Sabine, in his meteorological researches between the tropics, rarely found at the hottest period of the day so great a difference as 10° between the temperature of the air and the dew-point; making the degree of saturation about .730, but most frequently 5° or .850; and the mean saturation of the air could not have exceeded .910." (*Daniell*.)

† A discharge of steam into a glazed house has occasionally been employed; but the method requires much attention on the part of the operator, and seems inferior to other contrivances.

\* [A contrary effect is experienced in the valleys of our large rivers and lakes in the United States. On the banks of the Hudson a margin of land from half a mile to a mile in width on each side is very effectually protected from the late spring and early autumnal frosts; while beyond that limit vegetation is blackened by them. In autumn the warm vapor which rises on a cold night from so large a surface probably protects the adjacent shores; and even when moderate frosts actually occur, the morning fog, which lasts an hour or two, by softening the sun's rays and causing a gradual thaw, often prevents any injurious result to vegetation. Some of our large inland lakes, the surfaces of which are never frozen, have a decided effect upon the local climate, rendering it much more mild than it otherwise would be. A. J. D.]

† See *Hort. Trans.*, iii. 43.

‡ [In the northern and eastern sections of the union many beautiful shrubs and plants, which are the ornaments of our gardens in summer, but perish if exposed to the rigorous cold of winter, are easily preserved upon this principle. The first impulse of the novice in gardening is to place such half-hardy plants (as the more delicate China roses, carnations, &c.) in some warm sheltered spot, open to the genial rays of the sun in winter; a practice invariably followed by their destruction. Our sun, even in mid-winter, often shines with great brightness, and the thawing and distention of the tissue of tender plants which therefore follows, causes certain death. If, on the contrary, the same species are placed in a cool shaded aspect, or, what is preferable, if they are shielded from the sun by a loose covering of straw, mats, or even boards, and thus kept from thawing except in the most gradual manner, they will be found to have sustained no injury whatever. We have seen a large number of the choicest camellias preserved without any artificial heat through a cold winter, when the mercury ranged below zero for several weeks, simply by covering them with a common glazed frame, well clothed with mats to exclude the direct rays of the

may reduce it very much below the expectations of the cultivator.

The most unsuspected of these is the destruction of aqueous vapor, by the hot, dry, absorbent surface of flues. The advantages derived from hot-water pipes, or steam pipes over brick flues, are so well known, as not to require any evidence to prove the fact. Gardeners explain the difference in the action of the two, by saying that the dry heat produced by hot-water pipes is *sweeter* than that given off by flues; which is not a very intelligible expression. The fact is, that the air of houses heated by flues is under equal circumstances, much drier than that where hot-water pipes are employed; because the soft burnt clay of the brick flues robs the air of its moisture, while the unabsorbent surface of iron pipes abstracts nothing.

Another source of dryness is the coldness of the glass roof, especially in cold weather when its temperature is lowered by the external air, in consequence of which the moisture of the artificial atmosphere is precipitated upon the inside of the glass, whence it runs down in the form of "drip." Mr. Daniell observes that the glass of a hot-house, at night, cannot exceed the mean of the external and internal air; and, taking them at 80° and 40°, 20 degrees of dryness are kept up in the interior, or a degree of saturation not exceeding .523. To this, in a clear night, we may add at least 6° for the effects of radiation, to which the glass is particularly exposed, which will reduce the saturation to .424; and this is a degree of drought which must be very prejudicial. It will be allowed that this is not an extreme case, and much more favorable than must frequently occur during the winter season. Some idea, he adds, may be formed of the prodigiously increased drain upon the functions of a plant, arising from an increase of dryness in the air, from the following consideration:—If we suppose the amount of its perspiration, in a given time, to be 57 grains, the temperature of the air being 75° and the dew-point 70°, or the saturation of the air being .849, the amount would be increased to 120 grains in the same time, if the dew-point were to remain stationary, and the temperature were to rise to 80°; or, in other words, if the saturation of the air were to fall to .726 (*Hort. Trans.*, vi. 20.) It is well known that the effect of maintaining a very high temperature in hot-houses at night, during winter, is frequently to cause the leaves to wither and turn brown, as if scorched or burnt, and this is apparently owing to the dryness of the air, in consequence of the above causes.

It is evident that the mode of preventing this drying of the air by the cold surface of a glass roof will be either by raising the temperature of the glass, which can only be effected by drawing a covering of some kind over our houses at night, so as to intercept radiation, or by double glass sashes; or else by keeping the temperature of the air of the house as low as possible, consistently with the safety of the plants, and so diminishing the difference between the temperature of the external and internal air.

A bad system of ventilation is another cause of the loss of vapor in the atmosphere of glazed houses, to which reference will be made in the succeeding chapter.

It is, in all appearance, to the attention that, since the appearance of Mr. Daniell's paper, in 1824, upon this subject, has been paid to the atmospheric moisture of glazed houses, that the great superiority of modern gardeners over those of the last generation is mainly to be ascribed; there are, however, traces of the practice at a much earlier period, although, from not understanding the theory of the practice, no general improvement took place. In the year 1816, an account was laid before the Horticultural Society of a very successful mode of forcing grapes and nectarines, as practised by Mr. French, an Essex farmer, with very rude materials, and under unfavorable circumstances. It is not a little remarkable, that, although Mr. French himself correctly referred his success to the skilful management of the atmospheric moisture of his forcing-houses, the subject was so little understood at that time, that the author of the account not only shrank from adopting the opinion, but evidently, from the manner in which he speaks of Mr. French's explanation, had no idea of its justness. The method itself is sufficiently remarkable to deserve being extracted.

"About the beginning of March, Mr. French commences his forcing, by introducing a quantity of new long dung, taken from under the cow-cribes in his straw yard; being principally, if not entirely, cow dung; which is laid upon the floor of his house, extending entirely from end to end, and in width about six or seven feet, leaving only a pathway between it and the back wall of the house. The dung being all new at the beginning, a profuse steam arises with the first heat, which, in this stage of the process, is found to be beneficial in destroying the ova of insects, as well as transfusing a wholesome moisture over the yet leafless branches; but which would prove injurious, if permitted to rise in so great a quantity when the leaves have pushed forth. In a few days, the violence of the steam abates as the buds open, and in the course of a fortnight the heat begins to diminish; it then becomes necessary to carry in a small addition of fresh dung, laying it in the bottom, and covering it over with the old dung fresh forked up: this produces a renovated heat, and a moderate exhalation of moist vapor. In this manner the heat is kept up throughout the season, the fresh supply of dung being constantly laid at the bottom in order to smother the steam, or rather to moderate the quantity of exhalation; for it must always be remembered, that Mr. French attaches great virtue to the supply of a reasonable portion of the vapor. The quantity of new dung to be introduced at each turning must be regulated by the greater or smaller degree of heat that is found in the house, as the season or other circumstances appear to require it. The temperature kept up is pretty regular, being from 65 to 70 degrees." (*Hort. Trans.*, i. 245.)

In this case, which attracted much attention at the time, it is evident that the success of the practice arose principally out of two circumstances: firstly, the moisture of the atmosphere was skilfully maintained in due proportion to the temperature; and, secondly, a suitable amount of bottom heat was secured. This is, as will be elsewhere remarked, the principal cause of the advantages found to attend the Dutch mode of forcing. The

reporter upon Mr. French's practice speaks with surprise of the rudeness of the roof of his forcing-houses, and of the numerous openings into the air through the laps of the glass and the joints of the sashes; but these were points of no importance under the mode of management adopted.

The impossibility of preserving any plants except succulents, in a healthy state, for any long period, in a sitting-room, is evidently owing to the impracticability of maintaining the atmosphere of such a situation in a state of sufficient dampness.

An excess of dampness is indispensable to plants, in a state of rapid growth, partly because it prevents the action of perspiration becoming too violent, and partly because under such circumstances a considerable quantity of aqueous food is absorbed from the atmosphere, in addition to that obtained by the roots.

But it is essential to observe that, when not in a state of rapid growth, a large amount of moisture in the air will be prejudicial rather than advantageous to a plant; if the temperature is at the same time high, excitability will remain in a state of continued action, and that rest which is necessary will be withheld, the result of which will be an eventual destruction of the vital energies. But, on the other hand, if the temperature is kept low while the amount of atmospheric moisture is considerable, the latter is absorbed, without its being possible for the plant to decompose it; the system then becomes, in the younger and more absorbent parts, distended with water, and decomposition takes place, followed by the appearance of a crop of microscopical fungi; in short, that appearance presents itself which is technically called "damping off."

The skilful balancing of the temperature and moisture of the air, in cultivating different kinds of plants, and the just adaptation of them to the various seasons of growth, constitute the most complicated and difficult part of a gardener's art. There is some danger in laying down any general rules with respect to this subject, so much depends upon the peculiar habits of species, of which the modifications are endless. It may, however, I think, be safely stated, that the following rules deserve especial attention:—

1. Most moisture in the air is demanded by plants when they first begin to grow, and least when their periodical growth is completed.

2. The quantity of atmospheric moisture required by plants is, *ceteris paribus*, in inverse proportion to the distance from the equator of the countries which they naturally inhabit.

3. Plants with annual stems require more than those with ligneous stems.

4. The amount of moisture in the air most suitable to plants at rest is in inverse proportion to the quantity of aqueous matter they at that time contain. (Hence the dryness of the air required by succulent plants when at rest.)

#### THE BLISTER FLY.

From the Kentucky Farmer.

We are very much obliged to Professor Mitchell for the following; and we think his remarks go to encourage the suggestion we threw out, of the propriety of employing children in gathering

blister flies for sale to the apothecaries. We have observed, since writing the previous notice, that some of the flies have but one stripe on the back, while others have three, by which we conjecture, the different sexes might be discriminated.

There are now two material remarks to make upon the subject of this destroyer. The first is, that his ravages may be arrested by the use of lime, as directed in an excellent communication from Mr. Pindell which we publish to-day; and the other is, that the destroyer himself, may be easily caught and made a profitable object of commerce. We have now recorded to opinions of Doctors Mitchell, Parker and Martin, in favor of the excellent qualities of the fly for producing blisters.

Near Lexington, August 10th, 1841.

Dear sir:—The article in your last number, on *blister flies*, has claims to further notice. They have completely riddled my sugar beets and potato vines. They appear to prefer the sugar beet, to the common kind, the latter being comparatively but little injured. On examination, after reading your remarks, I perceived considerable variety in the bugs, as I find them among my beets. Some are almost entirely black, while others have several yellow streaks, running lengthwise. They are all about three fourths of an inch in length, do not attempt to fly, but fall to the earth readily when the leaf is shaken.

The flies are all known as *potato flies*, because found in patches of that vegetable, but they are varieties of the genus *cantharis*. The species already known amount to seven or eight, though four only I believe have been employed medicinally.

The most common species is the *cantharis vittata*, called also *lytta vittata*, *potato fly*, &c. It was first described in 1781 by a foreigner, but in 1805, its properties were noticed in a memoir furnished by Dr. Isaac Chapman, of Bucks county, Pennsylvania, in the New York Medical Repository, vol. 2d, page 163. During the last war, Spanish flies rose to an extravagant price, and at length could not be had at all, in some parts of the country. This emergency led to the extensive use of the *potato fly*, above named, in the Eastern hospitals, dispensaries, and in private practice. I made several trials of this American fly, in 1811 and 1812, with entire satisfaction.

Dr. Chapman caught the flies in a common quart mug, which he placed in boiling water, to destroy the vitality. He says, "as no difficulty attends gathering them, children may be profitably employed in the business, and as *cantharides* often sell at from ten to sixteen dollars per pound, they will be an object worthy of attention."

The *ash colored fly*, described first in 1801 by Illiger, I have not seen. It abounded in Massachusetts in 1808, and excited a good deal of interest in the medical profession. It infests the potato vine, bean vines and wild indigo, and some mistake it for the *vittata*, which is mainly black, but has yellow lines on the breast and back.

The *Cantharis marginata* was examined by the late Prof. Woodhouse, and afterwards by Dr. Harris, of Massachusetts. It is black, with two

lengthened lines of a bright clay color. It is rather larger than the *vittata*, and of a different form.

The *Cantharis atrata*, or black fly, is the most completely black of all the species. But it is not the fly we have among us, for it is not more than a half inch in length, nor is it found so often on the potato vine, as on some other plants.

Besides these, Messrs. Say and Mitchell, found some other species near the Rocky Mountains, though they have not been submitted to satisfactory trials.

These flies are not annual visitants, but come here and there occasionally. In the heat of the day, they descend into the soil, and operate on the vegetable fibre in the morning and evening.

If you think these notices worthy the attention of your readers, they are at your service.

THOS. D. MITCHELL.

AMERICAN BLISTER FLY AND PEACH TREE GRUB DRIVEN OFF BY LIME—FISH OIL FOR PEACH AND PLUM TREES.

From the Kentucky Farmer.

Lexington, Ky. 16th Aug., 1841.

Dear sir:—I saw, in your last paper, a short notice of a fly that has been very destructive to some kinds of vegetation in several counties. It has been noticed for some years, but is greatly increased in the present. The common name is the American blister fly, and it is said to be even superior for blisters to the Spanish. They first attacked the potato tops in my garden, and utterly demolished them, treated the beets in the same way, and next commenced their depredations upon cabbages and tomatoes, and would have swept them in a few days. They proceeded in large numbers, and in a few hours would strip a cabbage or tomato vine to shreds.

I succeeded in stopping them and completely driving them off from every thing they attacked, after I discovered the effect of the application, which was very simple. I took common slacked lime and sprinkled it early, before the dew was off the plants and when damp from rain, upon all the vines and cabbages, &c. upon which the flies were feeding, and the instantaneous effect was, to produce a great stir and early abandonment of their quarters. In this way, I completely drove them off, and have no doubt but that my potatoes and beets might have been saved if I had applied the lime in time. I of course made the same application to any thing I thought it probable they would attack, and I have been unable to discover any injurious effect of the lime. And while my pen is in hand, I will give you the result of another successful experiment with lime. I had some young peach trees of fine kinds and last fall noticed them turning yellow and preparing to die. On examination, I found they were beset by the grub, and some of them with nearly all the bark at the root eaten off. In the winter, during a thaw, I removed the earth around the tree to the lowest point I could find a grub, and destroyed all I could find, and applied lime freely where I had taken out the earth, and left them in this way until spring, when the removed dirt was returned.

Some of the trees were so far gone that I thought no medicine could heal them. This summer, they are all green and as healthy as they can be. I have heard of a successful protection from this grub by using, spring and fall, an application, in the same way, of the scrapings from our common limestone turnpike roads. This is used by the same person as an application to other fruit trees, and with the finest effect. Fine crops of peaches and plums are produced every year, by a gentleman of this place, and his trees are treated in this way: In the fall, common fish oil is applied, from a pint to a quart, to the root of each tree. In the spring, before the bud starts, the same application is made and the body of the tree rubbed with oil, two or three times, at intervals of a week or ten days. A piece of flannel or cloth is tied round the tree and saturated at the same time with the oil. The whale oil soap, mentioned in some of the papers, may be a more effectual remedy; at least I will try it.

I have spun this out longer than I intended. Though to you and me a very interesting subject, I am very sorry to say that the great bulk of your readers care nothing about any remedy for the ravages of the grub, and would not use one ever so simple and certain.

R. PINDELL.

LIME—MARL—TOP-DRESSING.

Extracts from the Address of Gen. Thomas Emory to the Agricultural Society of Queen Ann's county, Md.

I have frequently been jeered with the inquiry of what possible benefit will internal improvements be to the Eastern Shore of Maryland? and making a long argument a short one, I have answered—they will give us time for the improvement of our worn out lands, if nothing else.

Men are apt to deride things from a want of knowledge; particularly are they so prone, when a lack of this useful commodity causes them to believe they have all knowledge.

I here, before this respectable society, at a moment of the deepest odium from taxation, levied for the purpose, renew and proclaim my adhesion to necessary works of internal improvement for the whole state, with the Eastern Shore inclusive. In doing this, I do not mean to give approbation and approval to the humbug of certain offices in the state, nor to the propriety of the expenditure of many heavy sums of money which have been disgracefully squandered by the legislature, or by the corporations on worthless individuals, who employ their wits only to learn how to fatten on the public money. The people of the state, moreover, cannot be too strict in watching the conductors of the public works, and holding them to the strictest accountability. This being done, notwithstanding the losses and waste sustained, I believe all the great works will hereafter, when finished, pay a fair interest on their outlay. I have already glanced at some of the effects of these public works, in restoring to Baltimore by artificial means its lost trade, in arresting emigration from our borders, and in enhancing the value of our lands. I will now come nearer home, and add that it is a moderate estimate to suppose that within the last twelve months, and at the beginning of the trade, from one hundred to one hun-

dred and fifty thousand bushels of lime have been distributed for manure on the shores of Chester river and its tributaries. I have seen as much as 8000 bushels at one time afloat in sight of my house, and the trade is constant and increasing.

It will be borne in mind that not one bushel of this lime could have been sold here at prices to justify its being used as manure, had not it been for the works of internal improvement, built or patronized by the state of Maryland. We are indebted to the Chesapeake and Delaware canal, and Tide Water canal, and to the rail-roads leading to Baltimore, for all the stone lime we can or ever shall use here as manure. I would beg to put the question to any farmer now present, who has not on his farm a full supply of marl or oyster shells, and who has tasted of the value of lime, whether he would not prefer that the present temporary tax, about to be laid to pay the interest for expenditures on internal improvements, should be fixed for ever upon his property rather than that he should for ever be denied the use of lime as manure?

Our lands have gone up, and they are still destined to go up much higher, within striking distance of navigable water. The first inquiry now made by an intelligent farmer desirous of buying, is, has the land marl or oyster shells, or is it accessible to lime? This is a pregnant inquiry, and the value of the farm is found to depend much upon the manner in which it can be answered. For my own part, so thoroughly am I convinced of the indispensable necessity of lime for the re-uscitation and permanent improvement of our exhausted soil, (after an experience of over thirty years, and abundant reflection on the value of lands and their productive power, and on the comparative value of other business,) were it possible for me to live my days over, and were I offered one of the best farms in the state destitute of the calcareous material, and required to live on it and work it to the end of my days without the privilege of procuring lime, I would not accept it as a gift. This you will say is a bold assertion, but I make it after full reflection and deliberation. My experience teaches me to believe, that the calcareous and alkaline ingredients are the basis of the fertility of all soils, and that the best apparent soils, without this *sine qua non*, may be easily exhausted, and that they cannot, by any system of tillage, be held to permanent fertility without it. The use of lime and good farming will ere long revolutionize and fertilize this whole shore within reach of navigable water. But when our lands are thus improved, they will not reach their just comparative value, because their possessors will not be able to use them for the best and most valuable purposes, until they adopt the right sort of steam boat navigation, and take it under their own control—and, above all, till they have a cheap and expeditious highway, running through the shore, and connecting with the public works which lead to Baltimore and Philadelphia, and open those markets to them, in the winter, the most profitable of all seasons of the year. Without this, these markets must remain closed to them for all valuable purposes. Who now, on this shore, having the most ample necessary means to accomplish it, dreams of establishing a dairy on a large scale—who undertaking to raise hay on an extensive scale, either to sell or to feed

to winter fattening stock—who to gather up and send to market in the leisure season of winter, the various little articles, the aggregate proceeds of which are all clear profit, and amount to so much ready money? none of us, because those markets are as effectually closed against us in the winter season, as if there was an ocean intervening.

The people on our shore do not yet sufficiently estimate this heavy deprivation, this terrible drawback upon the intrinsic value of their lands; but light on this subject will increase with every revolving year, until public sentiment will award to the treachery or the ignorance of those Eastern Shore legislators, who have greedily surrendered the power we had of relieving ourselves from this difficulty, that niche in the temple of fame to which they are now fully entitled. I have contended for this important matter of relief for our shore, till I have been brought to the verge of ruin, and am wholly unable to proceed further. I leave it to others, well assured that the time will come when it will be a source of regret to the people of the whole shore, that the effort has so far been unavailing.

I regret that in consequence of other engagements, of which I was not aware, I did not succeed in my effort to have a meeting of the board at my house on the first day of this month. The board had, just twelve months before, witnessed an experiment that I was making, by turning under for wheat fallow an oat lay, which had it been harvested would have given me 45 bushels to the acre. The experiment was on about five acres, with the oats taken off from two of the contiguous sides of the square. I wished the board to see this experiment for themselves, when they would have seen a fair crop of wheat on all the field; but I am persuaded no human being could, from the visible effect of the oats turned under, have discovered where the operation began or ended. This is the third experiment I have made of turning under a heavy crop of oats on recently limed land, just at the time they were beginning to change color, and now being satisfied it will not do, I shall repeat it no farther. No green crop that I ever have turned under for manure, except clover, has realized my expectations. Even clover lay I prefer with the top mown or grazed off. The future effect upon the land I yet desire to witness in the after cultivation, but the oats turned under this season having been completely decomposed by the quantity of rain, I do not expect to have my opinion changed, and expect confidently to remain where I now am, and have been for a long time, a firm believer in the propriety of surface manuring, rather than turning it under. I have never been disappointed in weeds or other manure spread upon the surface and allowed to decompose there, and thus become absorbed by the soil. When turned under the soil, it bleaches, seems to become neutralized, and its effects are lost and go I know not where. It may be that the direct action of the atmospheric air is essential to give vigor and fertilizing effect and action to substances known to be manures. I know that, when turned deep in a thin soil, dark substances lose their color, and on my land they do not act as manures when thus placed. I have recently seen an account of the successful experiment of a North Carolina farmer, who, rolling

down an oat crop, allowed it to waste on the surface, which I much desire to see repeated here. This experiment much better accords with the theory of surface manuring, which seems rapidly to be gaining ground every where.

#### SALT LIE, OR SPENT LIE.

From the New England Farmer.

In the manufacture of hard or bar soap, much lie is run off. Ashes, lime, salt and grease are put into the boiler, and the lie contains a portion of each of these ingredients. Each of these may be a fertilizer. And may not the lie be serviceable on the land? We were told last winter, that Hon. Wm. Jackson, of Newton, had used the lie from his factory for several years upon grass lands, and that he had furnished his neighbors with the article for use upon their fields. Upon inquiry, we learned that several farmers who have tried it, continue to put it upon their grounds. In past years they have used it only upon the grass; but this season it has been applied where corn, potatoes, carrots, and the like have been planted. We have recently visited some fields where it has been used, and the result of our observation is, that crops upon it, excepting where the land is quite dry, grow very well; but since other manures were used with this it is not easy to say precisely how far the lie is beneficial. More good would result from its application in wet times, than in dry; for its influences apparently resemble those of the urine from the cattle when in the pasture. Every farmer knows that in a hot and dry time, the grass perishes, where the urine is voided; and he knows equally well that the urine in wet weather increases the growth of grass. So it is apparently with this lie. Generally no harm has resulted, even in the drought of the last month, to the crops in Newton, which are upon land that had the lie applied to it in May. There need be little apprehension of harm, unless the lie be put in the hill, or directly under the seed. Where it has been spread upon corn land and harrowed in, the corn grows well—but in one place in Wenham, where *fodder corn* in drills was put upon the lie in June, the corn failed to vegetate well, and much of what came up withered and perished; though the stalks which survived are now doing well.

We are using this article. Having procured a tight box, made of pine plank, 10 ft. long, 4 ft. wide, and 2 ft. deep, and fixed it upon the wagon axletrees, we procure loads of about 600 galls. each. This we cart 5 miles. In one side of the box is a plug filling a two-inch auger hole. For the purpose of unloading, this plug is taken out, and the lie is run into heaps of soil or of muck. The load of 600 gallons will saturate from 11-2 to 21-2 cords. This is thrown over once or twice, and at any convenient time is spread upon the land. We have not yet had opportunity to ascertain its effects, but are so well persuaded that it will be beneficial, that we shall continue through this season to haul all that is run into the cistern from which we draw. The manufacturer of soap put down a cistern which holds 2400 gallons, and put into it a pump, placed so high that the liquid is pumped directly into the wagon

or box. On the top of the box is a slide, about one foot square, through which the lie is admitted. We pay for the article at present, \$2 per load of 600 gallons. Whether this article is worth its cost, we do not yet know; and we should have made no mention of it at present, but for our wish that attention may be drawn to whatever promises to be serviceable as a manure, and that its virtues should be proved by all who are willing to make experiments.

#### EXTRACTS FROM REPORTS OF THE EXECUTIVE COMMITTEE OF THE "ASSOCIATION FOR PROMOTING CURRENCY AND BANKING REFORM."

Published by order of the Association.

##### *Earliest effects of the forming of the Association.*

\* \* As short as has been the time since this Association was commenced, its establishment has already produced some novel and excellent effects, in inducing inquiry, and eliciting information from sources before dark or hidden. Before our movement to sustain the operation of the existing suspension law in its requisition for the resumption of bank payments next January, who among the apologists for, and advocates of the banks, had uttered a word to complain of the shortness of the limit of suspension, as fixed by that law? Who among them had even whispered the opinion that the banks ought not and could not pay specie next January, as required by that law? Who had dared to confess, or permit the necessary inference from other assumptions, that this law, like its several similar annual predecessors since 1837, had been passed but to deceive and to cheat the expectations of the people of Virginia founded thereon, and was designed to be re-enacted, and its operation postponed, before next January, and afterwards again and again? Not one. All who held any of these opinions were as silent as the grave in regard to them, until the petition of our Association, for the observance of the limit of the existing law, provoked opposition, and forced the opposers either to utter their objections, or, otherwise, by their silence, seem to admit the justice and propriety of our declared purpose. But now, many persons are ready to advocate the object that before was kept so effectually, if not designedly, concealed. Now, nearly every apologist for the recent and present procedure of the banks, and who therefore is opposed to the object of our petition, assumes as premises, that the limit of bank suspension, fixed by the last law of indulgence, is *too near at hand*—that the banks will *not* be then ready to pay specie—and that to compel them will be ruinous to the banks, and greatly injurious to all debtors, and the public interests. We will not now stop to consider and oppose these objections; but will merely remark that, if they were as sound and deserving of respect and submission, as in fact we deem them otherwise, those persons who now assert these opinions *ought to have been the first to speak*, for the purpose of calling attention to and condemning the limit of the existing law, and to urge the people to unite to petition for further extension of the limit, although (as it is understood) the law was pro-



posed and written, and the limit of suspension fixed, by the highest authorities of the banks themselves. But no doubt the banks and their most thorough supporters desired that no suspicion of their intended game should be awakened, until so short a time before the arrival of the legal limit of suspension, that the legislature would be again *compelled*, by the then necessity of the case, (though the necessity were to be produced by the bad faith and improper conduct of the banks,) to give them another year of indulgence and continued suspension.

If our Association were to do no other good than to induce these developments, this alone would be worth all the trouble taken, and all sacrifices made or required. The issue between resumption and re-suspension of specie payments has now been made, and put fully before the people, six months in advance; and the arguments are presented, on both sides, on the important question whether the banks shall at any time, or never, pay specie for their notes and other debts. We use the word "*never*" advisedly, and to be taken to the very letter. For, the facts (so called) asserted, and the arguments used by bank advocates, to show the necessity for again postponing the resumption of specie payments for another year, have already served for the three preceding years, and will serve as well for every successive year hereafter, and, consequently, for all future time. We therefore clearly have the right to infer, that any one who is well informed on the subject, and who is not deluded in regard to facts, (as are most of the disinterested supporters of and apologists for the banks,) and who advocates continued suspension of payments on *merely* such grounds as these, is in fact contending, whether he so designs or not, for the policy of *permanent stoppage of specie payments*, and an entire currency of irredeemable, and therefore necessarily depreciated currency, as the fixed future policy of our country.

*The banks of Virginia not preparing for or intending to pay specie next January.*

It would be a valid and conclusive objection to the above inference, if the banks were indeed making any efficient progress in their pretended preparation to pay specie. But it is certain that such is not the case. The banks are *not* getting ready for a return to specie payments, because they expect again to put off the requisition of law for another year; and, according to the rate of their recent progress, they never will be more ready than they were last winter, or the winter before that. The first six months of the current year, they have even increased their average paper circulation compared to their specie.\* And this

\* "The statements rendered by the three principal banks of Virginia show their respective amounts of notes in circulation and specie to be as follows on July 1.

*Bank of Virginia and Branches.*

Notes in circulation, . . . \$2,649,798  
Specie on hand, . . . 821,442  
Or \$1 specie for \$3.22 of paper in circulation.

*Farmers' Bank and Branches.*

Notes in circulation, . . . \$2,339,015  
Specie, . . . 677,530  
Or \$1 specie for \$3.48 of paper in circulation.

operation, so treacherous to the object of the law of indulgence, and most unjustifiable in every aspect, was so enormous in the Farmers' Bank during the first three months, that its *net* profit, (which of course are increased in proportion to the excess of paper over specie,) were as high as 10 per cent. per annum. And so lost to all sense of shame were the authorities of that bank, that the official report, furnished to the newspapers, was prefaced with a boast of this great profit, as if it were a notable evidence of their merit.\*

Thus, according to our view, opposition to our petition, whether the motives of opposition be virtuous though mistaken, or of less defensible character, and the willingness to accord to the banks a re-extension of suspension for 1842, amount to an efficient support of the *permanent* policy of an entire irredeemable and depreciated paper currency. Are there any persons, except those interested in the existence of banking abuses, and the greatest possible extension of bank loans, who will consent, for any consideration of present convenience or profit, to fasten this fatal policy on our country? Probably none as yet; and even of the partisans of the banks, not one would yet venture openly to recommend or defend the permanent establishment of an exclusive and irredeemable paper currency. But, nevertheless, unless the movement of this and other associations shall prevent, or in some other way the people shall take the remedy in hand, this general and destructive policy is as certain to be established, as that another year of bank suspension will always be required "for the banks to get ready to resume," after the end of each preceding year of indulgence.

*The actual course, and the proper course, of opponents from good motives.*

We readily admit, and incidentally and indirectly have already stated, that many of our opponents are impelled by motives as honest, as patriotic and as disinterested, as we claim for our own. We fully believe that very far the greater number of those who, because deceived by false pretences, will now oppose our petition and advocate still another term of indulgence to the banks, and suspension of payments, are truly enemies to this and to all other of the known fraudulent operations and tendencies of the existing banking system of this country. It is only because of their having been misled and deluded, that all these good citizens and disinterested and independent as well as well-meaning and honest men, and who in principle and in general opinion are with us, yet lend their influence and weight to

*Exchange Bank and Branches.*

Notes in circulation, . . . \$774,085  
Specie on hand, . . . 238,839  
Or \$1 specie for \$3.31 paper in circulation.

We have not yet received the report from the smaller western banks, but presume they are no better off. The general proportion of all the Virginia banks on January 1, 1841, was \$1 specie to every \$3.05 of paper in circulation, which was being something better prepared to pay specie than after another half year of pretended "preparation" to pay."—*Farmers' Register*, Aug. 13.

\* This statement, and the preparatory boast appeared in both the Richmond Whig and the Compiler, at the same time, and in precisely the same words, so as to prove a common source.



further the designs of the ultra irredeemable paper partizans. It is by these, our honorable and patriotic but mistaken opponents, that we are most anxious to be heard. And if our arguments and statements fail of all effect in changing their course, we would beg leave to suggest a mode by which they can maintain their principles and yet oppose what they deem the too hasty exaction of specie payments. All such persons are in favor of the banks resuming specie payments at *some* future time—and very few would now agree to an extension of more than (the always needed) "one more year." They would then sustain their position and principles, oppose our greater precipitancy, and at the same time test the sincerity of their leaders and allies, by putting forth another petition to the legislature, to extend the permission to the banks to suspend and withhold specie payments to such certain named time as may be now deemed ample—but to make the resumption, at that named time, *certain*, and under sufficient legal penalties in case of failure. If our proposed limit to suspension is deemed too short, (though fixed by the law and by the banks,) let the other petition fix any more distant time for resumption. Let 6, 12 or even 18 months be added to the limitation which the present law fixes, and which our petition asks to be held sacred. But whatever be the extension of the limit, let it be *final*. If acting on this plan, our opponents upon patriotic and disinterested grounds would then find that many of their present allies would desert them, and will either never advocate resumption of bank payments at any certain time that can be named, or, otherwise, will change their language and their position before any such time shall arrive. These our well-meaning opponents would then see that they themselves had been placed in a false position; and that to support their own principles and desired public policy, they ought to be *on our side*, instead of, by opposing us, subserving mere banking and borrowing interests. And all sincere and true advocates for resumption of payments, in general, might easily compromise upon the mere matter of the proper time. For though we hold, with the law, that the existing limit is remote enough, yet it is comparatively of little importance whether the limit be then, or 6 or 12 months later, provided when the time shall arrive, that then specie payments shall be surely resumed and maintained.

*The general deficiency of specie in the United States not the cause of the bank suspensions—but the continuation of suspension a cause for a continued decrease of specie.*

One of the sundry fallacies which are continually assumed and set forth as if they were axioms in banking, is that there is not enough specie in this country to serve the banks to resume payment—and that it could not be procured from abroad, except at much too great a sacrifice to the people at large. It was not because of the deficiency of specie, in the United States, that the banks all suspended payment in 1837, and that they still continue their suspension. It was because their circulation of paper was enormously expanded in proportion to the specie kept for its redemption; which disproportion was caused, and always will exist as greatly as the laws will permit, by the simple operation of the universal

rule, that the more paper a bank keeps in circulation, and the less specie it keeps on hand for redeeming the paper, the greater will be the profits of the bank. Besides—the banks of Virginia, as generally elsewhere in this country, by their long continued and repeated acts of bad faith, have justly forfeited much of the confidence of the country which they formerly enjoyed, and therefore a much larger stock of specie is now necessary to meet the expected demands of note-holders than would have been previously. These difficulties have been entirely caused by the misconduct of the banks—and the longer they continue to suspend the performance of their just obligations the more will these difficulties increase. The banks cannot possibly return to doing justice, and at the same time continue to receive the full profits of their injustice, and course of violation of moral and legal obligations. The general suspension in 1837, we repeat, was not caused by the general deficiency of specie; but the certain effect of bank suspension and the consequent rejection of the use of specie as currency, is to cause it to be sent away to countries that still use it as currency. There is no rule more indisputable than that two kinds of currency, of different rates of value, cannot circulate or even exist (as currency) in any community, at the same time. This, one of the most important truths and principles of political economy, is susceptible of such familiar illustration for each particular case, that it can be made perfectly clear to every one. Suppose the currency of a town (say Petersburg) and its trading country to be of irredeemable bank notes, depreciated in value 5 per cent. below the market price of specie; and suppose, by some extraordinary circumstance an individual becomes possessed of a sum in specie. What will he do with it? Will he use it, indiscriminately with his paper money, in paying his ordinary debts of account, or in making purchases for cash? Certainly not. For these, and every other ordinary expenditure, he will use his depreciated paper money, which was the kind of currency charged for and expected to be received by those with whom he dealt. He will not spend a dollar of his specie for anything for which paper will serve as well. This is the first, immediate, and universal effect of suspension of payments by banks, and of their paper being depreciated below the value of specie. And as every individual would have the like strong inducements so to act, there would be an almost instantaneous disappearance of specie throughout the country. It would only be seen to form that small part of circulation for which paper money would not be received at all, or could not serve; such as for change smaller than the smallest denomination of the current paper money, or for duties to government, or any other payments for which specie only would be received. But, on the supposition just made, the specie thus hoarded would not remain in the first hands, useless and profitless. As it would sell for a premium of 5 per cent. over the general currency, it would gradually but certainly be sold, and sent by the purchasers to places *which used specie for currency*, and where therefore only there was an effective demand for specie. The non-specie paying banks here would not buy it, of course—for that would be just the reverse of their actual and

general procedure, and be just so much lessening of their profits made by their suspension of payments, and depreciation of their bills. Individuals would not buy the specie, because, as above stated, it is the interest of no individual to use specie, when depreciated paper will pay all his dues as well. Of necessity then, under such circumstances the specie, soon or late, must leave such a country, and be sent to New York, or to Europe, where it will command its value as currency.

Thus specie is continually passing from the states which permit their banks to suspend payment, and where consequently specie is not used as currency, and going to New York or other places where the currency is based on specie. But the specie-paying policy of New York has already served to supply it to the trade of New York abundantly. The banks there have as much as they desire to keep in their vaults, and all the channels of trade and circulation are filled. Of course the surplus receipts of specie must be sent abroad, as a commodity, to be exchanged for other commodities more needed there than specie—and so it is sent continually. More than 7,000,000 of dollars in specie have been shipped from New York to Europe within the last ten months. The last packet advertised to sail from that port to Havre was to carry \$62,000 in specie. And thus, as long as bank suspension is permitted, as a regular or permanent policy of Virginia and other states, it operates constantly to lessen still more the stock of specie that is in the country. How absurd then is the belief that the extension of the limit of suspension serves to facilitate the resumption of bank payments!

There are but two possible modes by which suspended banks can prepare to resume specie payments. The one is, to draw in and lessen their amount of notes in circulation—the other by buying or otherwise procuring and retaining an increase of specie, to meet the expected demands. As may be seen from the official report of the banks themselves, they have been doing neither, but the reverse, during the first six months of the present year of indulgence to their suspension; and it is equally certain and notorious, that nothing had been done by them, effectively, or to any important extent, in either mode of preparation during the previous year; and nothing ever will be so done by them, until imperatively commanded and forced by the popular will and indignation, acting through the laws. And in thus failing to prepare for resumption of payment, the banks are guilty, in the highest degree, of bad faith to the community, inasmuch as every successive extension of indulgence has been granted to them by the legislature, and acquiesced in by the credulous and deluded people, because of the understood promises, expressed or implied, that such extended time of indulgence would be faithfully and honestly used by the banks to prepare them to resume specie payments at the end of that limit of time. Instead of that, these repeated acts of indulgence have been used but to increase the illegitimate and dishonest profits made by the very act of suspension, and the violation of legal and moral obligations by the banks.

#### *The selling of specie by the banks.*

But, in addition to this failure to increase their stock of specie compared to the amount of their

notes in circulation—a designed and systematic failure which well deserves to be called treacherous to the indulgent legislature and confiding people—what would be thought if it were charged that these banks have been and are regularly engaged in selling specie, for their own or other depreciated bank notes, for the profit of such premium or difference of price, as is caused solely by the depreciation, and that from these sales the richest of the present large and unrighteous profits of suspension are derived by the banks? Every disinterested hearer of such a charge would pronounce such conduct to surpass every thing of bad faith before known of the procedure of solvent banks—and most of the apologists for the present bank policy would cry out against the charge as a monstrous and groundless calumny. Yet we maintain it to be true, to the letter as well as in the spirit. Such transactions, indeed, are not called by so ugly a name as “selling of specie;” they are known, in common parlance, as the “selling of drafts on New York;” but it is nothing more nor less in each case than *selling the amount of specie which the draft or check commands*, and which amount is, at the time of the sale, in a New York bank, ready to be paid in specie. The specie is not the less belonging to the Virginia bank, because it is lying in the vault of a bank in New York, instead of one in Richmond or Petersburg; nor is it worth any less, as specie, to the bank here owning it, because of being in New York—but the reverse. Drafts for specie payable in New York will be worth more to most of those persons who may demand specie here, than would be specie paid here. And, therefore, the fund of specie in New York need not be brought here to be used for resumption.

In another place the evils of this general system of the banks dealing in exchange have been shown. As they use their power over the borrowing class to drive hard bargains with the first holders of the drafts on New York, an unfair and usurious profit is usually made in the first purchase by the banks. But, after having made that profit, if the specie, which these drafts at their maturity will command in New York, were but held there, every one of these numerous purchases would strengthen our banks, and prepare them the better to resume specie payments. But they cannot bear to yield so much present gain for such an object; and therefore their fund of specie in New York is regularly sold at such profit of premium as is regulated by the degree of depreciation of their own notes—and which degree of depreciation is itself in a direct ratio to the supposed discredit or bad faith of the banks. Their self-inflicted dishonor is thus made the most productive part of their trading capital.

#### *Bank usury, in principle and in effect.*

As was explained more fully in another report to the Association, the individuals with whom the banks carry on this profitable trade of “dealing in exchange” are subjected to the payment of what is in effect a grinding rate of usury. And there are still other kinds of extortionate usury, in point of fact and in a moral view, continually practised by banks, though the acts may be legalized by the unjust indulgence of law. Of this, we will offer an illustration that any one may see the truth of, and which none will venture to deny.

As the existing law of the land fixes the 1st of next January as the limit of time for the banks to pay specie, we have a right to infer from the law, and from the silence of the bank authorities to the contrary, that on that day they will truly resume specie payments, and of course that their notes will then be at par with specie. (Whatever we may fear or believe to the contrary is nothing to the purpose.) Now, on September 1, the notes of these banks are depreciated at least 3 per cent. below the value of specie. If then, on this day, an individual has discounted by the bank a note for \$100 due January 1, for a real business transaction, and to be paid at maturity, he will in fact get but \$97 for his \$100 (deducting the loss by depreciation,) and on his note will be paid to the bank \$100, at its maturity. Besides thus paying the legal and proper interest (at 6 per cent. per annum) of \$2 for the use of the 4 months loan, the borrower pays, 3 per cent. more in depreciation, or 5 per cent. for 4 months, equal to 15 per cent. per annum, for the loan of \$100. And if the rate of depreciation were 5 per cent. as it was but recently, or 10 per cent., as at an earlier time, the process would be the same, and the usury increased in proportion to the greater rate of depreciation. This business of lending depreciated bank notes by a bank, as lawful money, at their nominal amount, has been declared by a judicial decision in Mississippi, to be usury in the legal sense, and the lenders to be subject to all the penalties of usury. There can be no doubt of the correctness of the general principle of this decision and its universal applicability; but we do not undertake to say whether the particular interference and indulgence of the law of Virginia may not have effectually screened the banks from the danger of loss from these usurious transactions.

#### PLAN TO REMOVE STUMPS.

From the Western Farmer and Gardener.

*Mr. Editor:*—Although I am not myself a practical farmer, yet I love to see all the operations on a farm carried on with neatness and economy. I own a small farm of two hundred acres in Champaign county; and when I purchased it, the fields were greatly disfigured and encumbered with dead trees standing, and with stumps. I wish that I might have the pleasure of your company over the farm, or indeed at the house (for every field can be seen from the door) to show you the excellent condition which it is now in. There is scarce a stump or bush to be seen, except some very handsome shade trees purposely left for sheltering the cattle in the heat of summer.

The removal of these stumps has been accomplished by a very simple and economical process, which I will attempt to describe, in the hope that it may be beneficial to those who have their lands encumbered with trees and stumps. Procure a dry red-elm lever, about twenty feet long, and about six to eight inches in diameter—a good stout log chain, with two yokes of oxen; this is all the machinery that is necessary. The mode of operation is thus: wrap the log chain around the stump a little above the ground, and make

what is called a log-hitch; lay the lever horizontally on the ground, the large end next to the chain and against the stump; make the other end of the chain fast to this end of the lever, drawing the lever tight against the stump; the cattle are hitched to the small end of the lever, and driven around the stump in a circle, of which the lever is the radius. One revolution of the oxen around the stump will generally twist out the largest of them; but should not the power thus applied be sufficient to move the stump, the side roots may be uncovered and cut partly off; after this is done, the stump will be easily removed. You will find this plan much preferable to any "patent stump extractor" that you may have seen puffed in the papers. D. L.

#### ON THE EXTERMINATION OF NUT-GRASS.

From the Southern Agriculturist.

*Mr. Editor:*—Do you know nut-grass? And do you know how to get rid of it? Without waiting for your answer I will tell you. Hoe it from the beginning to the end of the season, at such short intervals as to prevent the upper vegetation from coming to maturity, i. e. from flowering. Your enemy, if he have been in long possession of his ground, will wage a hard contest with you for the greater part of the season, indeed you will be frequently tempted to believe him invincible; but towards the end of the campaign, if you have continued your attacks without wavering, you will perceive his courage and strength drooping, and by the end of it, that he is fairly on the retreat. But on the opening of the next campaign you will again see him, though in diminished numbers and in scattered positions. If you recommence your attacks, and continue the same practices as before, about the 10th or 15th July, you will receive his final capitulation. I have in this manner exterminated a great deal of nut-grass.

The best way of hoeing this grass is to chop it an inch or so below the surface, and go over it once in every three or four days. I have never tried the plough expressly for this purpose, but I have no doubt that it would be equally efficacious—perhaps more quickly so. Indeed, I regard the plough, when steadily used, as the most certain eradicator of the nut-grass, while as to the joint-grass it is the best means in the world for propagating it. The reasons in both cases are, I think, too plain to require explanation. As to facts, we know that in the section where the plough is the common and chief implement, nut-grass is unknown, except in yards or inclosures, where the plough never comes; while joint-grass is the universal and growing pest.

The nut-grass shoots up in the spring from solid tubers, or nuts. The roots immediately after developing a certain length of leaf, form a little below the surface of the ground an enlargement or tumor, from which radiate on every side two distinct kinds of offsets—one a small black filiform radicle on which the nut is formed subsequently to the inflorescence—the other a whitish succulent brittle sprout, which after running a little way horizontally comes up another plant, which commences immediately to do the same as the first

sprout; and this process is continued in quick succession to the end of the season. Soon after the several plants go to flower, the black radicles which issue from them begin to form the nuts, which remain in the ground as the parent sources of the vegetation of the next season. The old tubers die soon after bringing out the new vegetation. The object of the foregoing treatment is to prevent the nut from being formed, and the representation I have made gives the rationale of it. With respect, &c. F.

In reply to our esteemed correspondent "F." we would inform him, that it has been our misfortune to form a very intimate acquaintance with the common enemy of the southern planter—*nut-grass*. We will also suggest what we think a more successful, and certainly a far more economical method of exterminating it, than that proposed in his communication. Our remedy is deep winter ploughing, followed by the free use of the harrow or cultivator, and the frequent and diligent employment of the latter implement during the growth of the subsequent summer crop.

When we purchased our farm in the fall of 1839, we found one portion of it—about five acres—so badly infested with *nut-grass*, that the standing crop yielded a miserable return for the labor that had been expended upon it. One part of the five acres was in sweet potatoes, and the individual who cultivated the farm informed us, that he had been utterly unable to keep down the nut and joint grass, although he had hired additional force during the summer, expressly for the purpose of exterminating these common nuisances.

In the month of December we had the whole farm thoroughly and deeply ploughed by a large plough, and a pair of strong horses. To do this, we employed a laborer from the state of Maine, who had been accustomed to such work, and who performed it most effectually, notwithstanding the ground was very rough.

The plough was followed by the harrow, first in the direction—then across the furrow. By these means a large proportion of the tubers of the *nut-grass* were brought to the surface, where they were exposed to the frost of winter.

Early in March, about one half of the five acres was manured broad-cast, ploughed again, seeded in oats, and thoroughly harrowed, so as to effectually cover the grain. The oats grew well, but just before it had attained its full growth, it was attacked by the army-worm—the larva of a small night moth (*of the genus noctua*.) by which it was cut down as effectually in a few days, as it could have been done by the hand of man. About the first of June this same piece of ground was prepared for slips in the following manner: Furrows were drawn four and a half feet apart, with a large two horse plough in which a good supply of manure was scattered, after which, with two bouts, with the same implements, (or four furrows,) beds were formed upon the manure, in which all the stubble and sward were completely turned under. The hoes followed, and by a slight touch, made the beds smooth and even, after which the whole was planted in slips, chiefly yams. The slips grew off beautifully, and yielded beyond our most sanguine expectations. But it should be stated, in regard to the subsequent cultivation, as it may have

an important bearing upon the *nut-grass*, that as soon as the slips had taken, the sides of the beds were ploughed down, by taking a slice from each, with a single mould-board plough, after which the dirt was thrown back by the same implement, the work being completed by the hoes. The same process was repeated once, except that at the second working, after cutting the slice from the beds, the cultivator was passed twice in the middle, so as to pulverize the ground thoroughly, and put it in condition to be hauled up readily by the hoes.

In the winter of 1840 this ground was again ploughed, although left in fine condition after the potato crop, and in the month of December and January following, was planted in dwarf marrow-fat peas, which yielded a most abundant crop. As soon as the peas were off, one part was put in water-melons—the remainder in corn—both of which have succeeded well.

We have already stated that only one half of the ground was seeded in oats. The other half, after thorough ploughing and harrowing in the spring, was put in melons, which, during the early part of their growth, were repeatedly worked with the plough and cultivator. After the melons were off, this piece of ground furnished a most abundant crop of hay—not *nut-grass*,—but luxuriant crab-grass, which grew so rank as to be mowed with considerable difficulty. It was then cleared off, ploughed three times, harrowed as often, and ridged for turnips,—one half *ruta-baga*, the other half red-top, snow-ball, and Pomerania. In putting in this crop, the ridges were formed twenty-eight inches apart, and the manure deposited in the interval. The ridges were then reversed so as to cover the manure, and the turnips drilled upon the top. The crop was kept clean, and the ground well pulverized, by means of a small plough, the cultivator, and the hoe. There was probably never a better crop of turnips raised near Charleston.

The same ground has yielded, the present season, a good crop of melons; will be ready for mowing in a few days; and will then be prepared again for turnips.

It may be stated, in general terms, that the *nut-grass* has disappeared, its place being supplied by a luxuriant growth of crow-foot (*Eleusine indica*.) and crab-grass (*digitaria sanguinalis*.) Some time after the first winter ploughing, the dead, dry, and partially decayed tubers of the *nut-grass* were seen thickly disseminated over the whole surface of the soil, and as those which were not brought to the surface by the first operation have been subsequently exposed by frequent stirring and other acts of tillage, they have been submitted to the same destructive processes, and the ground formerly so much infested, although it may here and there exhibit a few plants of *nut-grass*, may be said to be as clear of this troublesome enemy of the farmer, as any land in the low country.

To all those who are troubled with *nut-grass*, our correspondent amongst the rest, we would recommend as the best means of exterminating it:—

1st. Deep winter ploughing—not scratching with a small single horse plough, with a lazy negro to guide it—but ploughing to the depth of at least eight inches—even twelve, or more if possi-

ble—also frequent and thorough harrowing, or the use of the cultivator during the winter months, so that the tubers and stoloniferous fibres of the plant may be brought to the surface, and exposed to the frost. They need have no fears of injuring their lands by deep ploughing, provided they furnish them with an adequate supply of manure. The common prejudice against the plough, and the defective use of it, are the greatest curses upon low country agriculture.

2d. To put such crops upon the ground as will admit of its being frequently stirred during the growing season, with the plough and the cultivator—especially the latter instrument.

By the adoption of this course, we will venture to predict, that in a few seasons they will have the satisfaction of seeing one of their most troublesome enemies effectually vanquished.—ED. SOUTHERN AGRICULTURIST.

#### AMERICAN COTTON PLANTERS IN INDIA.

The Mobile Journal publishes the following extract from a letter from a native of one of the cotton growing states who is now in India under a contract with the Government, or a company who are making an attempt to improve the culture of cotton in that country. The letter contains information which is curious, and deserving of attention from the authenticity of the same.—*Jour. of Commerce.*

*Calpee, May 10th, 1841.*

I am now about six hundred miles from Calcutta, in the district of Bundelcund, and have commenced business after a sort of fashion. As to labor, I can get plenty, such as it is; one of our negroes will do more work than five of the natives. They are something like our Choctaw Indians at home, only much inferior in strength, courage, and energy.

There is no forest for them to roam in here, as the Coctaws have, and they are therefore compelled to make a living, such as it is, by labor, and the rent to the government eats out the profit of all they do cultivate. The land here all belongs to government, and the natives have to pay rent for using it. The rent is from three to nine rupees per begha, according to situation; the nearer a well the higher the rent, three *beghas* make about one acre of our measurement. This grinds them down so hard that they rarely attempt to make more than a mere living, which is nothing but a little rice. There are few of them that ever get animal food at all, so you may judge what sort of creatures they are for labor, compared with our negroes at the south. I do say that this is greater slavery than that of the slaves in North America. You may say they have no masters to order them to their work as you do slaves, but they are nothing like as well provided for or as happy. You can hire the best men here for five pice a day, women and boys at two to three pice—there are 43 pice in a rupee, and a rupee is worth about 45 cents of our money—so you see the free laborer here gets less than five cents per day, or one dollar and a half a month, with which to clothe and feed himself and pay rent to government.

Besides this, there are other circumstances against this being an agricultural country. There

is hardly any timber fit for use. I have seen no tree, since I have been here, higher than 30 feet to the top branch. There are no horses fit for work, except the Arabian, brought from Persia and sold at high prices from hundreds up to two thousand rupees, which is too much for any farm horse, and so we have nothing to depend upon for ploughing, but very small oxen, much inferior to those in America. We may make about 200 pounds of cotton to the acre, and three acres to the hand, which will be about 600 pounds, or a bale and a half of our weight, to the hand, but I have not yet heard of more than 100 pounds to the acre, and that of very inferior stuff compared with Mississippi cotton. Still, as this is much better than the native cultivation, I may do quite as well for myself as at home, for I am disposed to think the government will be liberal. I shall, nevertheless, return to America at the close of my engagement.

#### SAWDUST.

*From the Albany Cultivator.*

A. W. L., of Hempstead, L. I., in a communication says:

"My predecessor was in the habit of putting large quantities of sawdust, straw, &c., in his pig pen, let it get thoroughly incorporated and rotten, and then use it as a manure. On the purchase of the place last spring, I found on it a quantity of this sawdust manure, horse manure and long manure, which three kinds I separately put in different parts of my corn field. The result is this: the part with long manure is very poor, (by the way would not poudrette help it?) the horse manure good, and the sawdust *first rate*."

This method of using sawdust has been practised by the Shakers with great success. Rotted sawdust of itself would be a good manure, but put in a pig pen it not only decays, but it absorbs and retains much of the most valuable part of the manure, that would otherwise be lost. Of the great value of hog manure for the corn crop there can be but one opinion. It is decidedly superior to any or all of the ordinary manures for this crop, and a farmer should use every exertion, by frequently replenishing his pig pen with refuse matter, to increase the amount or prevent waste.

#### GARLIC, A CURE FOR KIDNEY WORM.

*From the Western Farmer and Gardener.*

*Bloomington, Ind., July 9th, 1841.*

Sir:—In the ninth number of your valuable periodical, under the head "*kidney worms*," the use of corn boiled with ashes is proposed as a remedy.

This remedy in recent and slight affections, I believe often proves successful; and so does arsenic, given in a dose of a teaspoonful or more; but this poisonous drug should never be given, except to stock hogs. The most certain plan of treatment, however, is to make an incision through the skin, about an inch long, parallel with, and

on each side of the backbone, *immediately over the kidneys*—and after separating the skin slightly from the parts beneath, inserting two or three cloves of garlic. The hair of the hog should be shaved off where the skin is to split, and after the garlic is put in, a stitch should be taken with a needle and thread, about the middle of the incision, so as to prevent the garlic from falling out. For thirty years past I have known this plan of treatment followed, and it rarely ever fails, even in the worst cases. Yours, &c.

D. H. MAXWELL.

#### SNOW-STORMS IN MOUNTAIN DISTRICTS.

From the Penny Magazine.

Those who have never witnessed the great accumulation of snow which takes place during some severe winters in the mountainous districts of the north of England, as well as of Scotland, would scarcely credit the extent, the length, the breadth, and the depth of some of the immense masses of snow that accumulate in certain situations among the mountains; and many persons there are, no doubt, who are totally ignorant of the fact, that in every mountain district of the north there are snow drifts that *never* wholly dissolve and disappear, but fragments of which remain from season to season, and from year to year, in the hollows and declivities of the mountains (for the most part where the aspect is northerly,) notwithstanding the copious and frequent falls of spring and autumn rain, to which these mountain districts are peculiarly liable, and the dissolving influence of the gentle breezes of summer. These fragments of the winter snow-drifts are seldom visible from the roads and highways leading through the open and more distant part of the country, or even along the adjacent valleys, and consequently their existence is known only to those who are familiar with the situations they are known to occupy. In these upland districts but small quantities of grain are grown, the soil for the most part being unsuited to corn crops, while the climate is even more so. Hence the farmers turn their attention to the breeding of sheep and black cattle, the mountain districts of the north of England being mostly sheep-farms; while in various parts of the hilly country in Scotland large numbers of black cattle are bred and sent to the southern markets.

In the sheep districts in the north of England the farms are seldom large, and yet many of the farmers manage to keep pretty numerous flocks of sheep, varying from three or four hundred to the same number of thousands. This, however, is effected only where population is scanty, and where the commons (usually called fells) are very extensive, and upon which the owners or occupiers of the enclosed land or farms enjoy an unlimited right of pasturage, or common right, as it is generally called. Hence it frequently happens that the occupier of 80 or 100 acres of enclosed land, and much of it of but an indifferent quality, if he possess sufficient capital, and the farm be conveniently situated, will keep a flock of sheep of 1000 or 2000 of the small black-faced or mountain breed, the whole of which he summer-pastures on the fells or moors; but a con-

siderable portion of which, particularly the younger and weaker part, he has to send out, at so much per head, into some more congenial part of the country, during the winter season. He could not, however, afford to pay for winter pasturage for the whole of his flock, and therefore the greater portion remains in his own enclosures, or on the lower ranges of mountain land contiguous thereto, during the winter, endeavoring to procure a scanty subsistence among the heath, the rushes, and the bent grass, in the best way they are able. But when the snow lies deep, and the weather is very severe, these animals, hardy as they undoubtedly are, would absolutely starve were they not supplied with a little hay from the homestead. The hay is commonly borne on the heads or backs of the shepherds, in bundles as large as they can possibly wade through the snow with; but occasionally on the backs of horses, where they can travel without much danger or difficulty. The hay is secured into a species of rude net-work formed of withies, and known by the local appellation of creels, in which loose hay, as well as that which is more solid, may be packed firmly and securely. When a snow-storm is of long continuance, the shepherds have enough to do in preventing their flocks straying away, and in supplying them with hay once or twice in the day, according to the severity of the weather; for wading through deep snow, with a heavy load on the head or shoulders, and often where the ground is hilly and broken, is a very laborious business.

Though there are neither fences nor other landmarks on those extensive mountain-ranges, from long usage, or some supposed right or claim, almost every sheep-farmer appears to consider that he possesses some peculiar privilege to the pasturage of that part of the common on which his flock usually feeds. Hence these flocks are rarely much intermixed with each other, the owners or their shepherds taking the liberty to drive or frighten away such of their neighbor's sheep as chance to mix among their own. Although this sort of arbitrary exclusiveness occasionally leads to bickerings and animosities between the parties whose flocks come thus in collision, it certainly prevents a great deal of trouble in separating and assorting at the seasons of sheep-washing, sheep-shearing, sheep-salving, &c., when each flock has necessarily to be divested of all intruders. It does not often happen that these extensive commons are overstocked, notwithstanding there being no limit to the number of sheep in any farmer's flock; but since the pasturage is of so poor a nature that, even when there is abundance of room, and to spare, for all the sheep that may be kept, the flocks never arrive at a high state of condition—nothing like that of fitting them for the shambles,—in case of any crowding or overstocking taking place, the reduced condition of the whole would be a serious consideration to all the parties concerned.

Though sheep, like most other animals, appear to be endowed with a certain degree of instinct, yet it does not follow as a matter of course, that it always operates towards ensuring their safety. Persons who have had the most frequent opportunities of observing them generally appear to have come to this conclusion, that when a storm is approaching they are seldom taken by surprise;

or, in fact, before it actually comes on, they have endeavored to find a place to shelter themselves from its fury : but in cases of snow-storms among the mountains, it very generally happens that the places of shelter from the bitter and piercing blast are places fraught with the greatest danger, for it is there that the drifting snow accumulates in vast masses ; and while the flocks that have sought shelter are comparatively warm and comfortable, probably before they are aware the drift will have become piled up in such a manner as to render all attempts to retreat impracticable even were they inclined to do so. Thus it sometimes happens that in the space of a very few hours some scores, nay, perhaps hundreds, of sheep become buried beneath the snow to a depth of several feet. In most parts of these mountain-regions, where the hills are pretty steep, their sides are usually furrowed by several clefts, or deep and narrow ravines, down which trickle the waters of small springs that commonly have their rise in the upper parts of the mountain. The spaces along the sides of the hills, between these respective furrows or dells, for the most part are smooth and bare ; so that at the approach of a snow-storm, should these places be resorted to by the flocks as places of shelter, they are soon buried to a considerable depth, since all the snow that falls on the smooth portions of the mountains is hurled into these dangerous ravines.

When a snow-storm comes on unexpectedly, the losses in the flocks of sheep are generally the greatest ; for when it is foreseen, the shepherds are on the alert ; and though it may not be within their power to prevent some portion of the flock being buried (overblown, as they call it) beneath the snow, yet, in most cases, they are aware of the situation the missing sheep occupied when the storm came on, and consequently know pretty well where to search the drifts for them. When the snow falls extremely light and feathery, the drift will hardly sustain a person's weight for a day or two afterwards but in such cases there is not much danger of the sheep being suffocated under it ; but when it falls in a softer state, but yet light enough to be drifted by a strong wind, the drift at once becomes consolidated and heavy, and then it is that there exists great danger of the sheep being quickly smothered.

There are two methods pursued in searching for the missing sheep when a snow-storm has subsided ; one of them with dogs,—sheep-setters, or, as they are sometimes called, sheep-finders ; the other, thus : three or four persons go in company, carrying with them a couple of long smooth poles, and also some spades or shovels. Those that carry the poles, walk along the drifted snow beneath which they suspect some of the sheep are buried, frequently pushing their poles gently through the snow, in order to ascertain, by the touch, the presence of the missing sheep ; when, having made the discovery of one or more, the shovels are employed in opening a way by which to liberate the innocent prisoners. Persons accustomed to this prodding (probing) for sheep, as it is called, can readily distinguish by the touch of the pole the woolly coat of a sheep from any other substance—even from the bushy and elastic heath, or the softer bent and mountain moss. This mode of search, however, is a slow and tedious process where there is a considerable breadth of drift, a

great deal of time necessarily being consumed in carefully examining a comparatively small space. Besides, it sometimes happens that the drifts are so deep that an ordinary pole will hardly penetrate them to the bottom, and in that case the system becomes altogether useless.

The employment of dogs to find the lost sheep is by far the better plan, where it can be effected. The sheep-setter is of no particular breed, though, for the most part, these dogs belong to the cur species. But there are so many varieties of the cur—or, at all events, so many coming under that very general term, that it would be impossible to define what peculiar class my father's dog, Corby, the sheep-finder, belonged to. He was large and black, strong-limbed, long and lean bodied, shaggy-coated, with a little white on the breast, as well as between the eyes. His ears were precisely those of the common cur, and his tail—for he was not tailless—was both large and long. Corby from his puppyhood was a favorite in the family, certainly not on account of personal attractions, for these were by no means in his favor, but from sundry good qualities that he was early discovered to possess. He was docile, sagacious, courageous, and faithful, and when he grew up he exhibited an extraordinary sense of smelling, particularly as regarded sheep, and hence he soon became the most renowned sheep-setter through a wide range of country. This rendered him of so much account that it in a manner changed his destiny, for having been brought up with no other view than that of his being employed as an ordinary shepherd's dog, his superior qualities soon procured for him a higher distinction, and he became a privileged character in the sitting-room and parlor ; scarcely any services were required of him, except after a severe snow-storm, when he was called upon to exercise his vocation, which, during many years, he lived to do, and with wonderful success.

It was not only upon our own farm and flock that Corby exercised the extraordinary powers nature had endowed him with, for his fame as a sheep-finder extended through all the surrounding parishes ; and many were the messages and requests that his owner would permit him to be taken to the distant parts of the upland country, where portions of the sheep-flocks were often buried beneath the snow. We had a servant-boy, to whom the dog was much attached, and when it was convenient to spare the latter to exercise his abilities for the benefit of our neighbors, the former usually accompanied him, for it was not to be supposed that so faithful and sagacious a creature would voluntarily accompany entire strangers. Money, of course, my father would never accept for Corby's services, but the boy that used to accompany the sheep-finder was not so rigidly scrupulous, and many were the shillings and half-crowns that he pocketed in the course of a stormy winter.

The sagacious animal always took advantage of the wind, where that was practicable, and the moment he was told to 'seek the sheep—be careful,' his whole attention was bestowed upon those parts of the snow-drifts that the parties pointed out to him. With his nose close to the surface of the snow, his eyes beaming with intelligence and anxiously watching every motion of the person that accompanied him, his ears in an attitude of



listening, as if he expected to assist the sense of smelling by that of hearing, would he traverse the hard, soft or slippery snowdrift. When he first ascertained that there were buried sheep somewhere in the vicinity, he would then examine, with peculiar caution, every part of the surrounding surface, until he appeared to have satisfied himself regarding the precise locality, and then he would commence scratching away the snow with all his might. This was a sure signal for those who carried the shovels to commence digging, but the dog was never satisfied unless he were allowed to continue his scratching, as if he were anxious to set the imprisoned sheep at liberty as soon as possible. Many dogs, and particularly those that have a cross of the terrier breed, that are occasionally employed in searching for sheep that have been overblown, the moment they get a sight of the sheep will endeavor to seize upon them with as much savageness as they would attack any wild animal; but Corby knew better than to act thus. In a single severe winter this dog has been known to have set (as finding the sheep in this manner is called) upwards of three hundred sheep, and though it may be true that a portion of them might have been discovered through other means, the probability is that he was the means of rescuing several scores that otherwise inevitably would have perished.

It might be supposed that where sheep are buried beneath eight or ten feet of compact snow, they would be crushed beneath the surrounding weight, if not to immediate death, at least in so severe a manner that they could not long survive. This, however, is rarely the case; and except when the fall of snow is immediately succeeded by a thaw, and suffocation or drowning naturally ensues, very few, comparatively, perish on account of the great depth of the drift, the snow being so porous that respiration is carried on without much inconvenience. Experience has shown that, for the most part, when sheep that have sought shelter in some ravine or hollow perceive the snow rapidly increasing on and around them they get upon their feet and attempt to shake it from their fleeces; and consequently in a standing position become finally enclosed in the drift. With the weaker portion of a flock this is seldom the case, for they commonly continue motionless where they have first lain down, in some sheltered situation, until the snow has accumulated so much that it would be impossible for them to rise did they make the attempt. The consequence of this is, that if they are not rescued for several days, they either perish through actual starvation, not being able to move at all or obtain the smallest particle of sustenance, or their limbs become stiff and paralyzed before death actually takes place. Those, however, that have been buried in the snow in a standing position, should they continue undiscovered several days, are generally found to have acquired sufficient room to turn themselves, and to be able to lie down and rise at pleasure; and where a few have happened to stand close together while the drift was forming, owing to the united warmth of their bodies, as well as their frequent movements, a rather considerable open space is commonly found surrounding them.

Instances have occurred of sheep being under the snow, for three or four weeks, and still surviv-

ing, and even for longer periods. But in all such cases they have had the power of nibbling the short grass, grass-roots, and even a portion of the soil, on a space of a few superficial feet, through which means life has been sustained through so protracted a period of confinement. It has been ascertained also that, where sheep have actually been starved to death before they were discovered, extreme hunger had driven them to tear the wool from each other's backs, which only goes to prove the powerful influence of hunger even over these meek and innocent creatures. When sheep are discovered that have suffered a long confinement under the snow, on their being liberated it is necessary to administer food in small quantities, otherwise fatal consequences might ensue; and notwithstanding they may partly regain their wonted vigor in course of time, it rarely happens that such sheep ever afterwards appear in a perfectly healthy condition, and in the enjoyment of all their faculties.

#### "DISPUTED QUESTIONS IN AGRICULTURE."

For the Farmers' Register.

A writer in the eighth number of the Farmers' Register, after commenting with some asperity on the confused notions which prevail among agriculturists on certain important, but at the same time easily ascertained truths, proposes five inquiries, and gives under each head the best means of arriving at satisfactory conclusions respecting them.

Of these, I will select two, and give to the readers of the Register what information I have collected from the results of several years' attention to those subjects, though I do not know if that information will be of any service to the writer of the article, gathered, as it has been, from a point very distant from the place where his experiments have been made. But it may avail others, if not him.

The first inquiry I propose to examine is the third in the order in which they are made: it is, "at what distance is it best to plant, and by what modes of culture corn will produce most net profit?"

On the first head of this inquiry, I have satisfied myself, from my own experience and from all the observation I have bestowed upon the management of others, that, in the middle region of South Carolina, corn on upland will, one year with another, on manured and unmanured lands, produce most at the distance of four feet by five, and one stock to the hill. This may seem to most planters too far apart, and that too much ground is lost thereby. If the object with the planter is to produce the greatest number of ears, and not the largest quantity of grain, I will admit that the distance is too great, but not otherwise. Thirty bushels of grain to an acre of Indian corn, on upland, is a large yield—far above the average with the best planters, and above the largest yield to any one, with most. It is easily proved, that an acre of corn planted four feet by five, and one stock to the hill, will produce over that quantity, if each stock will produce an ear that will measure a pint, and it cannot be a difficult matter to make land rich enough to yield a pint to the stock, if



sufficient distance is given. By lessening the distance, or leaving two stocks to the hill, a portion of the nutriment that would otherwise be imparted to the ear will be drawn away to support the increased quantity of stock and the blades thereon, and more fodder but less corn will be made thereby.

Added to this is another reason why I give that distance to my corn. I never take off the suckers, and I leave it to nature to relieve each stock of any superabundance of nutriment in the soil, by throwing off as many suckers as it can support. This last reason may be a very insufficient one to most planters, and I may have given rise to another "*disputed question in agriculture*," but I am fully convinced that nothing is gained by removing the suckers from corn, often injury is done, and always time is lost in the operation. So that though I leave my corn very wide apart at first, it becomes somewhat thicker, and just where I want it—in the best spots; and I have the distance better regulated by that means, than by the most judicious management of my own. On the propriety of leaving the suckers on corn, I could supply some interesting details, and perhaps some useful information, but I would thereby extend this article to two great length; and I will now, very briefly, in reply to the second branch of the above inquiry, state my method of cultivating corn, without, however, claiming for it the best mode, or that which will produce the greatest net profit.

The land intended for corn should be broken up deep, some time before it is planted. Just before planting, it should be thrown up in three furrows (with the *shovel* plough) and crossed (deep) with one furrow of the same plough. If manured, it should be trenched as follows. The hands employed in dropping the manure should use a basket for that purpose that will hold about a bushel. They should walk upon the three furrows, and at each check place one foot, and drop the manure on each side of the foot, and then gently ease up the foot, which will leave an opening in the manure at the bottom of the furrow for the reception of the corn, which should be immediately dropped, and covered. This may all be useless detail to most planters, but I have often seen corn dropped on the manure or covered with it, with decidedly bad effect.

As soon as the corn is fairly up, and attains some three or four leaves, it should be ploughed as deep as it will admit of. All the subsequent tending should be superficial. After the first ploughing it should be *moulded* with the hoe, and then ploughed four times afterwards with the *sweep* plough, and bedded with the hoe, when the corn is just getting in ear. This may seem a very great deal of work to many, who tend their corn with much less, but I have endeavored to answer the question, according to my own method and my belief, "by what modes of culture, corn will produce the most net profit."

I had intended to reply to the inquiry, "Whether it is injurious or beneficial to cut the roots of corn during its growth?" but I have already extended this paper to a greater length than I thought I would do in setting out, and I must reserve for some future numbers the result of my experience on that "*disputed question*."

COTTON.

#### STATISTICS.

From the Kentucky Farmer.

We copy from the Farmers' Register an article, alleging great errors in the census returns taken under authority of the general government. We have heretofore hinted our own doubts of the correctness of those returns, and have, consequently, been rather shy of publishing tables drawn from them. Of the utility of full and accurate statistics in relation to the multifarious articles of production and consumption, every intelligent man is perfectly convinced; and there is not a statesman in the nation who has not deplored the want of this valuable kind of information. But the essential value and utility of statistical tables depends upon their fulness and accuracy. As they are taken for guides in legislation and in beginning, enlarging and reducing numerous important branches of productive industry, they do a positive disservice, if not substantially correct. It is better even to grope in the dark than to be misled by a false light; as in the former case there is a possible chance of hitting the mark, while in the latter there is none. When legislation is guided by false facts, mischiefs and miseries must ensue. So, if an enterprising merchant, manufacturer, or farmer embarks in some new, albeit legitimate pursuit, under the guidance of statistics, presumed correct but really false, his prosperity is extremely precarious, if indeed his pecuniary ruin is not inevitable.

In reference to the census returns, we are well satisfied it will not do to rely upon them, especially in regard to the various productions of the country. There are probably some districts accurately reported, but the mass of errors in others must vitiate the whole. Possibly the returns of population may be sufficiently accurate for general purposes; but those relating to other matters ought not to be relied on. We do not mean to specify particular items of error when there is so much reason to doubt the correctness of any portion of the returns. We may however allude to the returns of hemp and corn, on which no intelligent man could for a moment rely.

Whether the incorrectness of the returns be due to inherent defects in the system of their collection, or to extraneous causes impossible to be foreseen, and consequently not guarded against in framing the necessary laws, is not for us to say; but that there *are errors*, of a character so serious as to render the returns dangerous, rather than useful guides, admits of clear and indisputable proof. We are fully aware of the great difficulty of framing and executing efficient laws for the procurement of statistic information, and that the most correct returns are to be regarded only as approximations to truth; but still they may be made to approximate so nearly as to serve as useful guides for general purposes.

#### SEVEN TONS OF GREEN FODDER TO THE ACRE.

From the Maine Farmer.

At first blush, one would suppose that an acre of ground which at any one moment should yield seven tons of green fodder, must be exceeding

rich; but there are a great number of acres, not only bearing this amount now, but which might very easily be made to produce four times this amount, or twenty-eight tons of green succulent food.

We, last May, measured off just one acre of land, and planted upon it Indian corn, making the rows, as near as we could without actually measuring, four feet apart in one direction, three feet in another. This, if we mistake not, will allow us four thousands hills.

Last week, (Aug. 2,) we cut up a hill which had four stalks in it, being, as near as we could judge, an average as to size, and weighed it. The kernels were just beginning to blister or form out, but by no means large enough to boil. It weighed three pounds and a half. This you will say is nothing extra. But if you calculate right, you will find that at this small rate there was actually growing upon that acre of ground seven tons of excellent green fodder, every particle of which, as it should be, would be greedily eaten by cattle. This weight will increase up to a certain point, when it would probably diminish by the drying off of the stalks and husks. This acre of corn may be called "middling" as to growth and luxuriance. There are thousands of better fields in the country.

Our friend I. Bowles, of this town, has a field planted so as to have sixteen thousand hills upon the acre, and we have no doubt that he has nearly that amount of hills. He marked off the rows with a machine so that the hills should be an equal distance apart, and to make the above number of hills per acre. But making allowance of two thousand, for the ravages of worms and missing hills, computing the number at 14,000, and supposing that the average weight is four pounds to the hill, it being a larger variety of corn than ours and highly manured, and you will have 56,000 lbs. or twenty eight tons of green fodder per acre. Now can a person, who has not a sufficient range of pasturage for a cow or two, more profitably employ an acre of land than by planting it to corn, even in the ordinary way? It is true that it will not, when cut, spring up like clover, or the grasses, nor will it come into use until the first of August. But that is the period of the year when pastures oftentimes begin to fail. It would supply a cow for two months in the year, August and September, with 90 lbs. of food per day. We have never had any practical experience in feeding out green food to cattle, or soiling them as it is called, but if 20 pounds of dry hay will be sufficient for a common-sized cow per day, we should think that 45 of green food would be sufficient. This plan may be objected to on the score of its expense. Perhaps more fodder would be obtained at the cost by planting the horse tooth or southern corn in drills, and cutting it as wanted. This variety might not be ready to cut quite as early as our own, but it would continue until frost came, and while it would on the whole yield more fodder upon the acre, planted in this way it would continue green longer.

From the Temperance Advocate.

#### REPORT ON HOGS.

Read before the Agricultural Society of Newberry, S. C., by Dr. J. N. Herndon, on the 25th July, 1841.

In pursuance of the direction of this society, we beg leave to present some few facts and observations on the subject of raising hogs; and in doing so, we are not so much influenced by the hope of enlightening this society, as by a belief that it is the duty of every member of it to contribute whatever he is able, no matter how small, to the advancement of the objects for which it was created, as well as the importance which we attach to the subject which has been assigned us. And we feel certain, that none will suppose we have magnified its importance when he reflects on the large amount of nearly one million of dollars, which we pay to the western states for the single article of pork, according to the accounts kept at the mountain toll gates, a few years since, exclusive of large quantities of bacon imported to Charleston, via New Orleans, and from the northern states. It appears to us a strange insatiation, that could induce a state or people to make themselves dependent on other countries for one of the necessities of life, when they possess all the facilities for procuring it at a much cheaper rate. Though we feel satisfied that it would be a waste of time and argument at this late day, to attempt to convince any member of this society of a fact, which experience has already taught him, that it would contribute greatly to the interest and independence of the people of this state, to produce their own supplies of meat, instead of buying it abroad, and from countries which do not reciprocate the advantages of the trade, by receiving in exchange some of the products of our country.

To the attainment, therefore, of so desirable an end, we shall briefly recommend the plan which we consider best calculated for that purpose.

One of the first and most important considerations should be to select a breed suitable to our purpose. According to our present plan of economy and management, we require a variety which are disposed to grow large, and which attain a tolerable size, even with the scanty allowance which our hogs are accustomed to receive; and not such as require the liberal treatment, and high feeding, which grain countries are able to afford, which could not be allowed them in a cotton growing country, without enhancing their cost to more than their value. We are of opinion the desired breed may be produced, either by crossing our common stock with the large class of improved hogs, which have been introduced, or by crossing the large class, with some of a small class which have been introduced. The large class alluded to include the Woburn, the Calcutta, and the Byfield, all partaking of the same general characteristics. That is, they are all large, coarse, ugly, flop-eared, and of lazy, indolent habits. The small class, before mentioned, comprises the popular Berkshire, the Cobbett, and the once admired but now abandoned Guinea. This class, especially the Berkshire and the Cobbett, are remarkable for beauty and symmetry of form, having great length and thickness, with small head and standing ears, and small and well turned legs, not so short as to render locomotion difficult. With

those materials, we think it would not be difficult to produce hogs of any form, size or habits we may desire.

Having procured a suitable breed, the next object will be, to produce and keep up a sufficient number for our purpose. To this end, six or eight good breeding sows will be sufficient for a stock of 100 hogs. They should be separate from the other hogs, particularly about farrowing time, and not too many of them together, for fear of over-laying or smothering the pigs; and care should be taken to exclude them from lying under houses or shelves, where there is dust, which being inhaled by the young pigs, is very destructive of them, producing irritation and inflammation of the lungs.

Now, having a sufficient number of hogs, of the right stock, the next object will be, raise them in such a manner as to make them cost us less than to buy them. The plan which part of your committee have pursued, and which we beg leave to recommend, though far from perfect, we believe will fully accomplish that purpose. It is as follows: commencing at the first of the year, we are under the necessity of feeding our hogs, through January and February, either on raw corn, or on boiled corn meal, which is far preferable, particularly for the sows and pigs; and if the sweet potatoes could be preserved until that season of the year, and fed to them boiled, with a small addition of corn meal, it would cheapen the cost of the first two months' feeding, very materially. The next two months, March and April, which is much the most difficult season of the year for hogs; they should be fed on fermented slops, made either of corn meal, or the refuse parts of flour, alias shorts. We think fermentation superior to boiling, because it assimilates and prepares the food more completely for digestion, and also, because it is less trouble which with us, is an important consideration; the only trouble necessary is to prepare a vat or tub, of the required size, then put in it one third of meal or shorts, and two thirds of water, and let it stand until fermentation takes place, which, after the first time, it will do very soon, provided a small quantity is left in the vat as a leaven.

Now, by the first of the next months, May and June, the oats will be large enough to graze on, which, with a small addition of fermented or boiled slops, will keep your hogs in growing order, until your stubble fields are opened, about the 1st of July. And to assist and cheapen the feeding of May and June, we recommend the cultivation of the different kinds of squashes, and also the sugar beet. They may either be fed raw, or boiled, which is preferable.

Now, having brought your hogs to the 1st of July, the difficulty is passed. If you can keep them in growing order until this time, they will fatten to the end of the year, provided you sow as much small grain as every planter in his country should do; that is, at least one-third of the land which he has in cultivation, leaving the other two-thirds for corn and cotton. This amount of stubble land, by the grain and grazing which it affords, will keep your hogs growing and thriving until the pea fields can be opened, from which time until Christmas, they can be kept fat on a succession of pea fields. We are aware that there is a prejudice with some, against feed-

ing stock hogs on peas, but we are convinced, from experience, that it is entirely unfounded, and that with plenty of salt, and plenty of water, there is nothing better or cheaper for feeding hogs; and we earnestly recommended to every planter, to plant at least a hill of peas for every one of corn; they will not only keep his stock hogs in good order, for near three months, but will almost entirely supersede the use of corn, in fattening his pork.

Let us now compare the cost of pork, raised upon the plan which we have proposed, with the price we are compelled to pay the Kentuckians, and we think it will not appear strange that those planters, who raise their own supplies of pork, are more prosperous, and get rich faster, than those who buy it.

We have proposed that the hogs should be fed on corn or its equivalent in value, for the first four months of the year, and that some corn should be given for the next two months; but allowing for bad management, we will suppose that they are fed for the first six months. We have found, on trial, that two bushels of corn in the ear per diem, will be sufficient to keep a stock of 100 hogs in growing condition for the first six months in the year, (together with the adjuncts before mentioned,) which is the only portion of the year in which the expense of feeding is felt; the two bushels of corn in the ear will be equal to one when shelled, and allowing 100 ears to the bushel, which is nearly correct, it would be giving one ear per diem to each hog; it would thus require 300 ears, or little more than three and a half bushels to bring the hog to two years old, which we think is the proper age for fattening, because then they fatten kinder than when younger, and beyond that age, they do not improve sufficiently in weight to warrant the expense of keeping. In addition to which, we think that after a good run on a pea field, one and half bushels of corn will be sufficient to complete the process of fattening. A part of this committee have found, that with the management herein recommended, a hog of the right stock, may be made to weigh at two years old, 200 lbs. neat. The stock alluded to is a cross of the Cobbett and Calcutta, though we have no doubt but that any of the crosses before mentioned would do as well; so that 200 lbs. neat pork, instead of costing \$12 to be paid in cash to the Kentuckians, costs you five bushels of corn and the run of your stubble fields, which would be lost, if you had no hogs; and the run of your pea fields, which only cost you the trouble of planting; for they require no gathering, and of very little injury to your corn crop, and of great service to your land. But to insure success in raising hogs, it will be necessary that their health should be attended to. The diseases, to which they are most liable are inflammation of the lungs and throat, poisoning by mushrooms, kidney worms, and mange and lice. The first is generally produced by lying in dusty situations, though very often it exists as an epidemic, affecting the hogs of a whole neighborhood at once. The symptoms are wheezing, and a drooping, sluggish appearance. We consider tar given in the feed, or by drenching, as the best remedy to prevent or cure this affection, by its stimulating action on the exhalents of the parts affected. The poi-

sonous effects of mushrooms are much more easily prevented than cured, for which purpose they should be either kept up during the wet seasons, which promote the growth of mushrooms, or salt and tar should be given frequently at those times, with the view of invigorating and guarding the stomach against the pernicious influence of the mushrooms; and salt should be given at least once a week through the whole year, for the purpose of promoting the general health of your hogs. The kidney worm may generally be cured by applying a tar or pitch plaster over the region of the kidneys, first having shaven off the hair and lacerated the skin. The best manner of getting clear of mange and lice, is to exclude your hogs from lying about your barn-yards and stables, and giving them sulphur, and anointing them with sulphur or mercurial ointment. There are some other points connected with this subject, which we intended to have noticed, but feared that we might be trespassing on your patience, though we hope that we have said something which may aid and encourage our people in freeing themselves from the dependence which they have long felt on the west, for one of the principal necessities of life.

#### THE PRINCIPLES OF BREEDING CATTLE.

From the Franklin Farmer of 1838.

The number of agriculturists who are devoting themselves to improving their cattle is so great, and increasing so fast, that authentic information on the principles of breeding cannot fail to be highly interesting and useful.

I have therefore concluded to present to the public through the columns of your extensively circulated and popular journal, five or six short articles upon the subject, arranged under the following heads:

- 1st. The grand principle that like produces like.
- 2d. The comparative influence of sire and dam.
- 3d. Breeding in and in.
- 4th. The value of good keep in breeding.
- 5th. The proper age for breeding.

The principles and facts which will be presented in these articles, will be almost entirely selected and arranged from that most elaborate and authentic treatise on cattle published under the superintendence of the British Society for the diffusion of useful knowledge. On this account the writer may ask for these articles the greater attention, as this work is of the highest authority both in England and America. From this work (which should be in the hands of every farmer) I will extract largely in the present article, which will be devoted to the illustration of

##### 1.—*The grand principle that like produces like.*

That which lies at the foundation and improvement of every stock, or the successful management of it, is the fact, the common but too much neglected axiom, that "like produces like." This is the governing law in every portion of animated nature.

There is not a deviation from it in the vegetable world, and the exceptions are few and far between in the lower classes of animals. When in the higher species the principle may not seem at

all times to hold good, it is because another power, the intellectual—the imaginative—somewhat controls the mere organic one; or in many instances the organic principle is still in full activity, for the lost resemblance to generations gone by is pleasingly and strongly revived.

This principle extends to form, constitution, qualities, predisposition to and exception from disease, and to every thing that can render an animal valuable or worthless. It equally applies to the dam and to the sire. It is the foundation of scientific and successful breeding.

Let it be supposed that the cattle of a certain farmer have some excellent qualities about them, but there is a defect which considerably deteriorates their value, and which he is anxious to remove. He remembers that like produces like, and he looks about for a bull which possesses the excellence which he wishes to engrail on his own breed, he tries the experiment, and perhaps to his astonishment it is a failure, and his stock may have deteriorated instead of improved. The cause of this every day occurrence was that the new bull had the good point which was wanting in the old stock, but he, too, was deficient somewhere else, and therefore, though his cattle had in some degree improved by him in one way, it was counterbalanced by the inheritance of his defects. Here is the secret of every failure. The newcomer, while he possesses that which was a desideratum in the old stock, should likewise possess every good quality which they had previously exhibited; then, and then alone, will there be an improvement without alloy.

This principle was the secret spring and the ground work of all Mr. Bakewell's proceedings and success. The prompt adoption of this principle enabled that distinguished breeder to build up the famous family of new Leicester long horns. By judicious crossing, the excellencies of several animals were happily united in one individual, and the good points were confirmed and rendered constitutional, by uniting animals which contained them. The skeletons or separate joints or points of some of the more celebrated of his animals were preserved or pickled, and hung side by side for the purpose of inspection and improvement. Some joints of beef, the relics of Old Comely, the mother of the stock, were particularly observed; the fat of the surloin on the outside was four inches in thickness. A four year old steer of this family weighed three thousand four hundred and seventy-two pounds. The four quarters of another of this breed weighed nineteen hundred and eighty-eight pounds, tallow two hundred pounds, and hide one hundred and seventy-seven pounds.

##### 2.—*The comparative influence of the sire and dam.*

If the preceding number established the principle that *like produces like*, it is obvious that the farmer who has a good stock of cattle to breed from will rear good stock, and will improve them; but if he has a bad stock to start from, the produce will be indifferent, and will grow worse. How obviously important is it then that his stock, both male and female, should be of the best quality which he can possibly obtain.

The question as to the comparative influence of the sire and dam is a difficult one to decide. That farmer will not err who applies the grand

principle of breeding equally to them both. In the present system of breeding, most importance, (and that very justly,) is attributed to the male. He is the more important animal on account of the more numerous progeny that is to spring from him, and thus his greater general influence; and therefore superior care should be bestowed on the first selection of him for rearing. He should, if possible, always be, in point of blood, of a superior degree to the stock to which he is to be bred; and besides, the farmer should study him closely, and be assured that he possesses, in more than a usual degree, the characteristic excellencies of the breed which it is wished to impart to his stock.

When this case, as to the possession of such combination of good points, has extended from sire to son through several successive generations, it may readily be supposed that he will possess them in a higher degree than the female can. They will be made, as it were, a part and portion of his constitution, and he will acquire the power, of more certainly, and to a greater extent, communicating them to his offspring.

In this way the influence of the sire may, in well bred animals, be considered as superior to that of the female; but her's is always great, and must not be forgotten. In Arabia where the mare is the object of chief attention, and her good qualities are carefully studied and systematically bred in her, the influence of the female decidedly preponderates; and on the same principle, that of the highly bred cow will preponderate over that of the half bred bull. Her excellencies are an hereditary and essential part of her, and more likely to be communicated to her offspring, than those which have been only lately and accidentally acquired by the bull with no pedigree, or with many a blot in it. Custom and convenience however induce the generality of breeders to look most to the male.

The question whether the sire or dam has the more influence in controlling the sex of the offspring, is perhaps not less difficult of decision. Cows generally breed males and females alternately; but their habit in this particular is not so uniform as to contravene a principle which has lately been promulgated chiefly by French writers on breeding. One of them mentions a great number of cases which establish satisfactorily the principle, that *the animal which is in the greatest vigor, (health, age, constitution and flesh being considered,) at the time of commerce will generally fashion the sex.* For example, an old and declining cow is bred to a young and vigorous bull, other things being equal, the produce will be male, because the bull was in the greatest vigor.

These principles lead to the statement of another, which is equally as important, and if possible better established, and perhaps less understood. If a man has a superior milch cow and wishes to raise milking stock from her, the common plan is to save her heifer calves. But according to a principle of breeding, sustained by facts as well as theory, by far the better plan would be, to save a bull calf from this cow, and his stock when he is put to breeding will have the excellent quality of his dam, and be, like her, superior milkers. For example, Cleopatra was an extraordinary milker, according to this principle her heifer calves may, or may not, make good milkers; but her bull calf Frederick, having her character and qualities bred

in him, will communicate them to his stock; and his heifer calves will be, like his dam, superior milkers.

This last principle suggests an important consideration in selecting a breeding bull, viz: that he be descended from a superior milch cow.

### 3.—Breeding in and in.

The judicious breeder will not too long confine himself to his own stock, unless it be very large. The breeding from too close affinities,—the breeding *in and in* as it is called, though it has many advantages to a certain extent, in the hands of most skilful and judicious breeders; though it may be pursued until the excellent form and quality of a breed is developed and established, and was the source whence sprung the superior cattle and sheep of Bakewell, and to some extent of the superior short horns of Mr. Colling; yet to it also must be traced the speedy degeneracy—the absolute disappearance of the new Leicester cattle, and, in the hands of many an agriculturist, the impairment of the constitution of the new Leicester sheep.

Bakewell was a master spirit in breeding, and it cannot be denied produced a breed of cattle worth the efforts of such a skilful agriculturist. The principle on which he seemed to act was novel, bold, and for a time a successful one. Some of his cattle were extraordinary illustrations of the harmlessness of such a system; but he had a large stock on which to work: a veil of mystery was thrown over the most of his proceedings and no one knew his occasional deviations from this rule, nor his skilful interposition of remoter affinities when he saw, or apprehended danger.

But what has now become of the new Leicester or Bakewell cattle? where are they to be found? It was a bold and successful experiment, and seemed for a while to answer the most sanguine expectations of that skilful and spirited breeder.

In districts, in which experiments were carried on, it established a breed of cattle equalled by few; and it enabled the long horns to contend, and often successfully, with the heaviest and best of the middle horns. But no sooner had the master spirits of the day disappeared, than the character of the breed began imperceptibly to change. It had acquired a delicacy of constitution inconsistent with common management and keep; and it began slowly but undeniably to deteriorate. Many of them had been bred to a degree of refinement, that the propagation of the species was not always certain. The breed itself gradually diminished; in some places it almost disappeared. The reader may scarcely give credit to the assertion, but it is strictly true, that in 1833 there was not a single improved Leicester on the Dishley farm; nor a dozen within the circuit of as many miles. It would seem as if some strange convulsion of nature, or some murderous pestilence, had suddenly swept away the whole of this valuable breed.

The above remarks are in substance taken from that valuable treatise on British cattle, before alluded to. In Kentucky, though the principle of breeding *in and in* has met with general disapprobation, yet it has been more or less practised by many breeders. To one of whom allu-

sion will be made, not from unkindness, but merely for example; for he, like Mr. Bakewell of England, is a monument to illustrate the impropriety of the practice. This breeder (now less notorious) had, several years since, one of the finest herds of milking and breeding blooded cattle in Kentucky, and deservedly had high reputation as a breeder. But, vainly imagining that they were far superior to all others, proper crossing was neglected; the stock began to diminish in size; many of them became hornless; and their constitutions were impaired, in consequence of which they suffered more from cold in winter, and were more liable to disease in summer; the murrain soon got among them, and played such sad havoc in one short season, that at present, only a few venerable animals remain, of that once superior but ill-fated herd.

With this short digression we will again quote our valuable author. "It has therefore become a kind of principle with the agriculturist to effect a change in his stock every second or third year; and that change is most conveniently effected by introducing a new bull. This bull should be as nearly as possible of the same sort; coming from a similar pasturage and climate; but possessing no relationship,—or at most a very distant one—not related to the stock to which he is introduced. He should bring with him every good point which the breeder has labored hard to produce in his stock, and if possible some improvement; and especially where the old stock may have been somewhat deficient; and most certainly he should have no manifest defect of form, and that most essential of all qualifications, a hardy constitution, should not be wanting."

#### 4.—The importance of good keep.

In the rearing and improvement of a stock of cattle, nothing, perhaps, is of more importance than the subject at the head of this article. Even the powerful excellence of blood and family are unavailing and insufficient long to sustain a valuable herd, without this indispensable accompaniment. Upon this subject our valuable authority has only a few remarks, but they are very comprehensive and decisive.

"There is one circumstance, however, which the breeder occasionally forgets, but which is of as much importance to the permanent value of his stock as any careful selection of animals can be—and that is, *good keep*. All good stock must be both bred with attention, and *well fed*. It is necessary that these *two essentials*, in this species of improvement, should *always accompany each other*; for without good resources in keeping, it would be vain to attempt supporting a capital stock. This is true with regard to the original stock; it is yet more evident, when animals are brought from a better to a poorer soil."

Let it not be imagined that good keep is thus indispensably necessary, only to the improved blooded cattle, for it is invariably true that mean feeding will produce mean animals, no matter what may be the breed. The owner of the hardy scrubs cannot reasonably expect them to produce large and well fattened carcasses, or abundant secretions of milk, without rich pasturage in summer, and bountiful supplies of nutritious food in the winter. I believe it is conceded that blooded cat-

tle require more luxuriant pasture and richer food, to cause them most fully and most rapidly to develop their excellencies, than the scrubs usually receive, nor is it matter of wonder or regret; for how can it be expected that an animal which secretes two gallons of milk, or gains two pounds of flesh daily, should subsist upon as little as one which secretes or gains but half that quantity!

This great necessity of good keep begins with the very existence of the animal; and nature, as if to teach us the lesson, ere its entrance into the world, has provided for its use a superabundant store. As the first year of the animal's existence is naturally the period of most rapid growth, so also it should be the period of most luxuriant feeding. As the most liberal provision is now most amply repaid, so also is the slightest neglect the cause of irreparable loss. Instances are not uncommon of calves which have gained a hundred pounds a month, for several months, upon kind feeding; and thus, in a few months, attain a size, which, perhaps, is not attained in the whole existence of those which are consigned to a scanty allowance of milk, and the more scanty grass of the yard or orchard.

The kind feeding of the calf is scarcely more bountifully repaid than good keep to the dam. If she is kept in good condition she will not only be more healthy, but will conceive more quickly and more surely: will bring a better, and a more thrifty calf; will pass through the dangers of parturition more safely, and will cleanse herself, and be restored, more speedily than if she is emaciated and exhausted by poor or scanty feeding.

Neither is good keeping without its genial influence even upon the sire of the herd. It is unquestionably true that a bull which is fed upon generous food will be a surer and a better breeder, than if his subsistence was poor and scanty. True, he neither stands to the pail, nor draws at the yoke; but when fully engaged his labors and excitements are scarcely less exhausting than are the duties of the cow or the ox; generous diet is therefore necessary to sustain him in imparting a vigorous constitution and fine spirit to his offspring. The observing farmer will readily avoid an extreme in this matter, by which heifers are sometimes made too fat to breed, and bulls too fat to be useful. But this is an extreme far less to be shunned, because far less dangerous than the other.

#### 5.—The proper age for breeding.

"The proper age at which the process of breeding may be commenced will depend upon circumstances. Even with the early maturity of the short horns, if the heifers could be suffered to run until they were two and a half, or three years, they would become larger, finer, and more valuable; and their progeny would be larger and stronger. But the expense of keep for so long a time is a question that must be taken into serious consideration.

"The custom, which at one period was beginning to be so permanent in the breeding districts of putting the heifer to the male at one year old, or even at an earlier period, cannot be too much reprobated. At the time when they are most rapidly growing themselves, a sufficient quantity of nutriment cannot be devoted to the full develop-

ment of the fetus, and both the mother and the calf must inevitably suffer.

"From two to two and a half years old, according to the quality of the pasture, will be the most advantageous time for putting the heifer to the bull. In fair pasture the heifer will probably have attained sufficient size in two years. If the period is prolonged after three years, and especially with good keep, the animal will often be in too high condition, and there will be much uncertainty as to her becoming pregnant; though, in general, putting on more scanty subsistence for a short time will set all right. At an early age there will often be danger in calving, from the heifer not having attained her proper size.

"It is evident from this that the bull should not be suffered to run with the young stock; and it is becoming more the practice, and often advantageously, to separate him from the cows altogether, except when in season. That which has been said of the best age for breeding the cow, will equally apply to the bull. It is absurd and dangerous to begin to use him as some have done when a yearling. He will come into season at two years old—he will be better at three; and although the farmer may not deem it prudent to keep him more than three years, he may then be sold advantageously, in his full prime, to another breeder."

The above extract is taken, *verbatim*, from the invaluable treatise on British Cattle; the principles stated, are no doubt drawn from the extensive experience of English breeders. They are so totally at variance with the practice of most Kentucky breeders and farmers, that it may not be amiss to confirm them by the following extracts from Lawrence's Farmers & Graziers' Guide.

"These remarks apply with the greatest force to those inconsiderate persons who, anxious to anticipate their most sanguine hopes, injure their stock by putting their heifers prematurely to breed; and who, did they but endure another season of necessary delay, would give time for nature to perfect the work of maturity, and ensure a healthy offspring; but those persons by an injudicious haste destroy the stamina of the animal's constitution, entail a feeble and unhealthy issue, exhaust the powers of the devoted animals, and not only shorten her life, but occasion many and serious disorders.

"Heifers should not on any account be put to bull before they have passed the second year of their existence; indeed if three years be allowed, the much better condition of the calves will amply repay the one year's delay." R. W. S.

#### PRESERVATION OF TIMBER.

From the Philadelphia Ledger.

We perceive that a committee of the House of Representatives have suggested the employment of *mineralized timber*, in the construction of the proposed bridge over the Potomac, between Georgetown and Washington. The process of mineralizing mentioned is that of Dr. Edward Earle, of this city. We can scarcely say whether this suggestion on the part of the congressional committee has occasioned us the more pleasure, or the more surprise.

We say surprise, for we have come to this pass, that it is really a matter of astonishment to see Congress enter upon the consideration of even the most obvious improvements in science. Notwithstanding all that has been said of the national enterprise in such matters, we are one of the most dilatory people upon the face of the globe, in availing ourselves of authenticated and established inventions. In such things as *morvus multicaulis*, we are prompt to a fault; but where the new scheme is a point of certainty, and not of speculative attempt, we are the most intolerable laggards in Christendom.

Here, for example, is this proposal of Dr. Earle for the preservation of timber by the process of mineralization. It is spoken of by the press, generally, as something new under the sun; and Congress, looking wise, takes it up with its thumb and forefinger, very much as a naturalist would take up a nondescript insect which had escaped the scrutiny of Swammerdam, or a quartz not to be found in Henwood or Carne—mentioned neither by Lyell, Phillips, Murchison or Featherstonhaugh.

We are not prepared to say, just now, what is the precise nature of the claims of Dr. Earle; but if these claims are to supersede those of Sir Humphry Davy, or of the French chemist, M. Boucherie, they must be of an importance truly wonderful. These eminent gentlemen have *demonstrated* (the former long ago, and the latter of late days) a mode of so preparing timber by mineralization, that it shall be *impossible to destroy it by rot*. They have shown that the process is exceedingly simple and *cheap*, and that, by its means, qualities of the highest value (besides that of durability) are imparted to the wood. The plan of Sir Humphry Davy has been long in operation in Europe, and that of M. Boucherie has engaged the attention of the French government for some time past. In the face of these facts, (and we will show them to be facts) does it not appear unaccountable that we should continue, day after day, in the absurd practice of building houses and fences of unprepared timber, and of laying with it railway structures, requiring a continuous repair that absorbs a great portion of profit? Does it not appear especially remarkable that our government will persist in building ships of unprepared wood, which fall to pieces before a launch can be effected, (as in the case of the vessel now on the stocks at our navy-yard,) when, at an equal cost or at a less, we might have men-of-war, to whose duration it would be impossible to assign a limit? Of course it does appear very strange, and rather than suppose ourselves or our government guilty of such supineness, or of such imbecility as is here imputed, the reader of this article will be inclined to fall back upon the belief that there is some error in our statement—in short, that some good reason exists for continuing the old fashioned practices.

Now this is a subject of manifest importance. It is important, whether we regard the supposed improvement itself—an improvement which comes *immediately* home to the bosoms and business of every man in the community—or whether we look to the conduct of that government which is bound to encourage the true and the useful, without reference to *party* or to favoritism.



Thinking thus, we will recur to this subject again, and endeavor to show, as concisely as possible, what is the exact nature of the mineralizing process of Sir Humphrey Davy and of M. Boucherie—also, more fully, what are the advantages to be derived from mineralization, with the *data* and authorities in support of the process. It will be found that, although the public mind in America is absolutely uninformed upon this whole topic, there is really no question whatever among the scientific in regard to the importance of the discoveries alluded to, or the feasibility of their practical application.

#### BREEDING OF STOCK.

From the Franklin Farmer (of 1838.)

Having, to some extent, been engaged in this business for the last thirty-five years, and not altogether an inattentive observer of the various fluctuations which have occurred during that time in this important interest, I have thought it might not be entirely useless to address a few reflections on this subject, to those interested in breeding and raising stock, through the columns of your useful paper.

The abundant yield of the rich soils of the valley of the Mississippi, under a proper course of culture, enables the grazier and feeder of stock to increase his operations to an extent unequalled by that of any other section of our union. The grand desideratum then is so to use his means as to make them most productive. I will enumerate some of the errors which have fallen under my own notice. About thirty-five years ago, great exertions were used to introduce the thorough-bred horse, and various fine animals were brought to Kentucky, of English importation. But few of them were purchased there, of celebrity, until they became so old as to have fallen into disrepute. It is a matter there of general notoriety, that between the age of ten and twenty years, is the time of life, when the immediate descendants of the horse are most powerful, muscular, vigorous, and capable of endurance. But after he has reached twenty, it rarely happens, however celebrated may have been his produce, that they have afterwards any claims to celebrity, as runners.) Those interested in the success of the importation of that day, had the address to convince the popular mind that the mixed blood which were then raised should be abandoned, and the thorough-bred take their places. All who were able to raise the means of breeding to the full-bloods did so, and the consequence was degeneracy ensued—their produce were weakly, delicate, and restive—possessing few, if any, of the qualities requisite for the saddle, or farm. Such as were not runners, (and of that number there were very few,) were unfit for any other valuable purpose; many at four years old would not command the money it cost to have them sired.

Disappointed with the bad success attendant on this experiment, another still worse was resorted to. Large, coarse, clumsy horses, of the Catawba breeds, were then brought; they also were freely patronized, and the opposite extreme followed, their produce were of unwieldy size,

clumsy, deficient in wind, hard to keep, and utterly unfit for domestic use or foreign market. Next came the Jack, and breeding of mules for many years was attended with great success, owing to the extensive demand and high prices paid for them by the planters of the South. But this, like most other pursuits which the great body of western producers turn their attention to, is now overdone. Nearly all the breeders are either raising the blood horse or the mule, neither of which are suited to the saddle, carriage or stage; the one being too restive and weakly; the other too obstinate and slow. The object of the foregoing remarks is not to discourage breeding of either of the classes of stock above enumerated or to detract from the great merits of the blood horse, but to suggest the advantage of dividing, and equalizing this business, so as to insure success to all. It is idle to suppose that mares of coarse blood and clumsy, or of diminutive size, will produce racers. Equally so would it be to expect small, delicate, blood mares to produce large and saleable mules. The large, coarse mares should be bred to the choice Jacks of the country; the smaller mares to the substantial, well formed, active half-blood horse, and the thorough-bred (of good size only) to the full blood, and proven race-horse. By attentively observing these rules of breeding, great improvement would be made in each variety of stock, and a sufficient number of all kept in the country, to supply the home and foreign demand, all commanding fair prices. The great error to be avoided is that of running with the popular current from one extreme to another, unmindful of the inevitable consequence of increasing the supply beyond the demand. S.

#### THE NECESSARY CONSEQUENCES OF ADMITTING THE PLEA FOR THE CONTINUED SUSPENSION OF SPECIE PAYMENTS.

Since the publication of our preceding number, there have appeared, for the first time, several articles in the newspapers protesting strongly against the resumption of specie payments by the banks of Virginia, at the time fixed by the existing law; and indeed *at any time* before the banks of Pennsylvania and Maryland shall pay specie. We do not propose to notice any articles which, judged either by their manner, or their source, or both, are obviously part of the bought services of mercenary bank hirelings. But there are writers whom we believe to be, and respect as, disinterestedly speaking in behalf of what they deem the public good; and in regard to *their* objections, and *strictly to the question* only, we shall make a few remarks.

And first, let it be observed that no one has pretended to advocate or justify the general procedure of the banks of Virginia in any one thing of the numerous particular abuses that we have condemned, as being right *per se*, proper, or beneficial to the community and to general interests.



Nor has *but one act*, or particular course of action, been justified and defended, even as a matter made necessary by the extraneous and unjustifiable action of foreign banks. This particular matter, which alone, among the host of banking abuses, is thus defended, is the suspension of specie payments by the banks of Virginia, and (as now for the first time avowed by any defenders) for the indefinite time that other states may permit the payments of their banks to continue suspended. Therefore, we wish it to be observed, the defence of the banks is limited to one charge only—leaving, as it would seem, all the other and far more important grounds of charge unanswered and untouched. When so much has been said and published *in defence* on one point only, is not such silence an indication of the other alleged abuses being altogether indefensible?

We wish to treat the subject fairly, and our opponents respectfully; and we shall aim to present the purport of their objection in its full force. It is said that the notes of the banks of Virginia are received, in the ordinary course of trade, in Baltimore, Philadelphia and other places, whose banks are not paying specie; and if our banks were to resume payment while the banks of these places in other states still refused payment for their own notes, that brokers would collect the Virginia notes, demand the specie for them from the banks, and drain the banks of specie as long as notes could be thus obtained for the purpose; and, as the notes of our banks in circulation amount to more than thrice their stock of specie, and as it is impossible for one dollar to pay a demand for three, that the foreign brokers, and the other demands which their action would induce, would draw all the specie, leaving two-thirds of the notes still unpaid. And hence the conclusions to which these reasoners come, (and which, whether named or not, are unavoidable on these premises,) that the banks of Virginia ought *not* to be compelled to pay, until those of Maryland, Pennsylvania, &c., shall also pay.

There are two ways of meeting this assumption. One is to show that the premises are unsound, at least in part, and therefore that the deductions, if not altogether illegitimate, at least require much abatement. But though this may be done, and we trust satisfactorily to unprejudiced minds, it is not properly incumbent on us to prove, or offer to prove, *negative propositions*. It belongs to those who assert these propositions to prove the existence of the premises and the extent of their operation in results. Until that be done, or at least attempted, it is enough for us, on the opposite side, to deny that the premises, and of course the conclusions, are correct, or that their

importance is such as to justify the continuance of the weighty evils of an irredeemable currency for an indefinite time. Whenever the advocates of the banks, and of non-resumption, shall abandon mere loose assertions of disastrous results, and attempt to fully exhibit facts as premises, and thence draw proper conclusions, we shall be ready to meet their *argument*. But there would be neither propriety nor utility in our undertaking to prove the *negative* of their unproved and unargued *positive* propositions—which indeed are but loose unsupported assertions of greatly exaggerated facts.

At this time we will merely take a rapid and concise view of the question in a different aspect. For the sake of argument, and to save useless words, we may even admit as sound and true all the premises above stated; and then the mere exhibition of the result, to which the argument inevitably and confessedly leads, will be enough to upset the whole policy advocated, in the opinion of every unprejudiced and disinterested advocate of the welfare, and especially of the *independence*, of the commonwealth of Virginia.

Admitting then all that is claimed as premises for the opposite side of the question, it comes to this conclusion: The policy of Virginia in the important matter of the currency—its stable or its fluctuating value—its rate and extent of depreciation, if depreciated—the fluctuation of the *apparent value* of land and other property caused by *real depreciation* and fluctuation of a vicious paper currency—all the losses to the ignorant and honest, and gains to artful speculators—the enormous moral as well as political and pecuniary evils thence certainly accompanying such a condition of things—all these important elements of the policy and the welfare of our commonwealth are to be *always* totally dependent upon the legislation, *not of Virginia*, but altogether *upon that of Maryland, Pennsylvania, and other states!!!* And we the people of Virginia, claiming to have equal rights with, and certainly separate interests from, those (*quoad hoc*) foreign states, are to submit, now and always, to be pillaged and oppressed so far as fraudulent banking and depreciated paper currency can serve to pillage and oppress, at the will and pleasure of the legislatures of foreign states, that have, or believe they have, an interest in continuing the system of pillage and oppression!!! This is the general proposition, or statement of the general principle; and independent freemen will not rest their decision of approval or rejection on the mere balance of the *possible* pecuniary profit to be derived from such submission. It would be a matter of universal conviction, that no pecuniary gain to the commonwealth could compen-

gate for such an unlimited and unknown extent of vassalage to foreign states.

Let us illustrate this state of vassalage.

When the constitution of Virginia was under revision and amendment, suppose that formal proposals had been submitted to the Convention, from the governments of Pennsylvania and Maryland, offering each to pay to Virginia \$100,000 a year, for the perpetual privilege of those states making the currency of Virginia, its depreciation, the market value of property, the fluctuation of value &c. &c., to accord precisely and fully to such extent as those states might choose to do for themselves by means of their irredeemable paper. And even limit the monstrous supposition of the rate of the extent of evil (though it is indeed unlimitable,) to just what has existed in Virginia for the last five years, and what must exist for the next five, or until the resumption of Pennsylvania shall cease, if her existing law be indeed held sacred. We may safely assume that not one voice in the Convention of Virginia would have been found in favor of yielding, for the consideration of \$200,000 a year, those rights and interests of Virginia which are yielded *for nothing* by the argument of our present opponents. And such yielding would have been deemed as unprofitable in regard to the mere pecuniary interests of the people of Virginia, as it would be degrading and infamous to an independent commonwealth.

But this argument for continued suspension does not go as far as it admits of being fairly carried. If the example of Pennsylvania and Maryland in the general matter of suspension ought to be always followed by Virginia, so the extent of such suspension, as to mode and legal limit of time, should also be conformed to.

Now Virginia preserves, by the act of last session, something like a specie currency of small change, by compelling the banks to redeem their small notes (for \$1 and \$2) in specie. These small notes are carried in for specie, much to the annoyance and diminution of profit of the banks; and doubtless all of these notes that reach Baltimore and Philadelphia are collected for that purpose by the brokers. To avoid this one remaining feature of specie-paying by our banks, and its certain consequences in the presenting them by brokers for redemption, our legislature certainly ought (to carry out the argument for the banks,) to make these small notes irredeemable; and, to supply the want of small change, permit, as in Maryland, bills to be issued by corporations or individuals as low as for 6 cents. Then, no specie

could be drawn from our banks, and there would be none of it in circulation; and the nuisance (or the blessing) of a discredited and greatly depreciated "shin-plaster" currency, such as exists in Maryland, would be universal in Virginia. Without this to complete the benefit, the existing *partial* redeeming law of Virginia leaves the banks and the country fully exposed to at least a part of the alleged evils of resumption of specie payments.

Again: As the argument for continued suspension claims that the banks of Virginia ought not to resume payments until those of Pennsylvania and Maryland resume, (we omit all other neighboring states, to which the rule will also apply—) let us see what is the shortest time at which such *permission* to resume may be expected. By the very infamous law of Pennsylvania, passed by the gaining of bribed votes in the last hour of a long session, the legislature of the bankrupt commonwealth of Pennsylvania made a bargain and league with her fraudulent banks, by which both the state and the banks were to aid each other in cheating the community. The banks were allowed by this law to continue their suspension of payments *for five more years from that time*; and as a condition of this unheard-of measure of fraudulent privilege, the indulged banks were to lend to the state three millions of dollars, for the same five years; with the proviso, that if the loan should not then be paid, the bank suspension shall still continue, until the loan shall be paid. Here, then, is a suspension of payments certainly fixed on Pennsylvania, and of course (according to the argument we oppose) upon Maryland and upon Virginia, for five years at least; and that merely that a government, which is afraid to lay taxes to pay the interest of its debts, might be enabled to *borrow* irredeemable bank notes for that purpose. But that is not all, nor half. Can any man believe that a government acting thus, and for such inducements, *will* pay the principal so borrowed within 5 years? And if not, then the suspension is to be continued, not only on Pennsylvania, but as a consequence on Virginia, until the debt shall be fully paid. And now, we put it to the farmers of Virginia, to the people in general, and even to our honest and disinterested opponents, (who have received from the bank organs as true, and have used this argument, and wish to apply the rule for the continuation of suspension in Virginia,) whether they are willing to abide the time, the pleasure and the interests, of the government and the banks of Pennsylvania, for the commencement of the resumption of pay-

ments in Virginia? If they are *not* willing to abide the *full time*, it will be useless to wait for a part; for if we wait four years for Pennsylvania and Maryland to resume, and then resume before them, all the evils which it is alleged would occur from resumption next January, would occur as certainly and as injuriously (if indeed at all) at the later time.

In a word—this argument against resumption at any fixed time, and before other states shall resume, leads but to one conclusion. It is in fact (though not so meant by most of those who urge or submit to it,) as full and imperative for a *perpetual irredeemable paper currency* as it is for its continuance during the pleasure of Pennsylvania and Maryland.

And if the people are not prepared for a suspension to be continued as long as five years more—and still less for ever—and for the perpetual policy of irredeemable and depreciated paper currency, they should act speedily to compel resumption of bank payments as early as possible. The longer it is put off, the more difficult it will be to be brought about. Almost every packet that sails from this country to Europe carries a large amount of specie, which as a regular commercial business is a necessary consequence of the non-specie paying policy of this country; and, so far as the quantity of specie in the United States has a bearing on the ability of the banks to redeem their notes, every month's additional delay will increase that obstacle to resumption.\*

\* In addition to the sundry facts before published in the newspapers, and of which enough have been copied into our summaries of news, on which the above general statement was based, the following have reached us within a few days after the above article was written, and before it could go to press.

"The last London packet from New York took out more than \$200,000 in specie."—[*Balt. Sun.*]

The last National Intelligencer has the following passage in the letter of its regular New York correspondent, who is a thorough *bankite*, and advocate for the paper system: "The rate of exchange is gradually becoming higher. As a necessary consequence, specie is shipped. The Havre packet, which sailed this morning, [Sept. 16,] took out \$240,000." (According to the "Money Article" of the Herald, it was \$250,000.)

Now, if the whole issue of the proper time to resume specie payments were to be made to turn on this one point alone, we ask was there ever a more gross deception in the pretence, or more gullibility in the belief, that the continued *delay of resumption*, which confessedly causes specie to be exported continually, will serve to make more easy the future resumption of specie payments by the banks!!!

The non-paying banks (if really solvent) could prepare to resume specie payments, and beneficially for the community, in two months. For this assumption we have the authority of Mr. Appleton, (in his recent pamphlet on this subject,) which, as that of a most enlightened bank advocate, and long experienced bank president, must be respected by those who would count *our* opinions as nothing. The great difficulty of getting ready to resume is in fact a mere trifle. It is merely to draw in the excess of circulation; and, to do this, it would not even be necessary to compel the payment of existing debts to the banks faster than ought otherwise to be required. It would be enough that they should *make no more new debtors* to the banks, until the payments of the existing debts, (as coming in every discount day, according to the ordinary course of business,) had reduced their circulation and liabilities within their means of meeting them. Of course the banks should stop selling specie for the premium, (as they do now, in drafts on New York payable in specie,) and should even buy more specie, if necessary. The community would not suffer at all, or any thing worth naming in comparison to the suffering from the opposite cause. There would be only two minor classes who would suffer a loss of present illegitimate gains; and for their gain, all the present general evils of an irredeemable paper currency are endured. These are, first the banks, or the stockholding interest, which of course would lose the present large and unrighteous profits made by their violation of all legal and moral obligations—by their greatly expanded issues and loans, and by trading and practising indirect usury upon the depreciation, thus produced, of their own notes. And secondly, the speculators and traders on fictitious capital, who depend on bank loans and accommodations to carry on business, would necessarily have to contract their operations—and of many, perhaps, it might be found that in fact they *had nothing to trade upon*, except the credit thus furnished by the bank, through the irredeemable paper system. If the insolvency or bankruptcy of any such persons were to occur, it would not be caused by bank resumption, but simply thereby brought to light. But let the loss to these two classes (stock-holders and bank borrowers, and we may add stock-jobbers and speculators,) be what it may, we submit the question to the people, whether, to prevent these losses, incurred as they will be solely by the participation of the losing parties in the long continued abuses of banking, and aiding their injurious operation on

the public interests, the *people* are willing to continue to bear all the evils they have long suffered and will still more suffer, from this iniquitous and fraudulent system? If so, indeed, then we have nothing to do but submit, in common with all others, to be thus oppressed through all future time. But, while there remains a hope for successful resistance to this tyranny of avarice, moral fraud, and legalized swindling, we will be among those who will struggle to throw off the yoke, even if the impending consequences of such emancipation were ten times as costly in a pecuniary point of view as they are asserted to be by the predictions of bank advocates, and apologists for banking frauds.

#### EXPERIMENT OF PLANTING CORN WITH ONE OR MORE STALKS AT A PLACE.

To the Editor of the Farmers' Register.

*Louisa Co., Va. September 4, 1841.*

While my pen is in hand I will give you the details of an experiment in planting corn which I made in 1839. It may be of some interest to your readers.

My object was to ascertain how the product of the crop is affected by the mode of planting: as, with only a single stalk in a hill, or with more. A piece of land of good quality, and pretty well manured, I laid off by stakes in straight rows or drills 5 feet apart. Thirty of these rows of equal length, were divided into three parcels of 10 rows each. One of these parcels, I planted with a single stalk in a hill, the hills being placed one and a half feet apart in the drill; one with two stalks in a hill, the hills three feet apart in the drill; and the other with three stalks in a hill, the hills four and a half feet apart in the drill. By this arrangement it will at once be perceived that each parcel, occupying exactly the same space of ground, (which was just a quarter of an acre,) had precisely the same number of stalks of corn on it—the only difference between them being in the mode of planting; viz., one with one stalk, one with two, and the other with three stalks in a hill. The distances between the hills were taken by measure; the whole lot was planted at the same time, with the same variety of corn, cultivated alike, and harvested alike, and the product of each parcel, carefully kept to itself, was as follows:

- No. 1., one stalk in a hill, the hills one and a half feet apart, 14½ bushels.
- No. 2., two stalks in a hill, the hills three feet apart, 16½ bushels.
- No. 3., three stalks in a hill, the hills four and a half feet apart, 14½ bushels.

Thus it would appear, that on such land as I experimented on, corn is more productive with two stalks in a hill, than with either one stalk or with three; and that there is no difference in product between that with one stalk in a hill and that with three.

My lot of three-fourths of an acre produced 45 bushels, or at the rate of 60 bushels per acre;

while the quarter of an acre which was planted with two stalks in a hill, produced 16½ bushels, or at the rate of 66 bushels to the acre, being a clear gain of 6 bushels to the acre, merely from the mode of planting—a most important and valuable gain truly. There were some stalks missing in each parcel, but I thought not more in one than in another; and though there may have been some shade of difference in the quality of the soil, or of the manure applied to it, I did not perceive any. I thought the experiment was (as it was intended to be) a very fair one. I was induced to make it from reading in the Register a very valuable article on the cultivation of corn, from the pen of Mr. William P. Taylor of Caroline. He advanced the opinion, as the result of his experience and observation, that corn produces more when planted with two stalks in a hill than with one. Knowing that his experience and intelligence entitled his opinions to great respect, and having myself observed that one corn-maker of my acquaintance, who always plants with two stalks in a hill, (to save hoe work, which it does to a considerable extent,) generally made better crops than his neighbors, I thought it would be well to test it by accurate experiment. The result tends to confirm Mr. Taylor's opinion. The corn which I planted was a variety of the twin-eared prolific corn, and the season was a good one. The common opinion in this part of the country is in favor of planting with a single stalk in a hill; and I know it is in general unsafe to trust to a single experiment, or to the opinions of a few, in opposition to the common opinion of the world, founded on general experience; but so few accurate experiments have been made on this subject, that I have not hesitated to rely on Mr. Taylor's opinion, confirmed by my own experiment and observation; and I now plant my corn with two stalks in a hill, and recommend it to others to do the same. It certainly saves labor in planting, and weeding with the hoe, and I think there is a gain in the product of the crop.

Should this meet the eye of any who have made experiments on the same subject, I hope they will give the results through the Register.

The wheat crop in this region gives scarcely half the usual product. Corn, which was backward and indifferent in the early part of the season, now promises about its usual return. Tobacco, though later in starting to grow off than usual, is now doing well, and, if it escapes an early frost, may make a fair crop. The oats never were worse.

JOHN Z. HOLLADAY.

#### SOIL PROPER FOR THE VINE.

From Hoare's Cultivation of the Vine.

One of the principal causes of grapes not ripening well on open walls in this country is the great depth of *mould* in which the roots of vines are suffered to run, which, enticing them to penetrate in search of food below the influence of the sun's rays, supplies them with too great a quantity of moisture; vegetation is thereby carried on till late in the summer, in consequence of which the ripening process does not commence till the declination of the sun becomes too rapid to afford a sufficiency of heat to perfect the fruit. To prevent this, the

subsoil should be composed of dry materials. It is almost impossible indeed to make a vine border of materials that shall be too dry or porous. It is not mere *earth* that the roots require to come in contact with, to induce growth and extension, but *air* also, which is as necessary to them as to the leaves and branches. The excrementitious matter discharged from the roots of a vine is very great, and if this be given out in a soil that is close and adhesive, and through which the action of the solar rays is feeble, the air in the neighbourhood of the roots quickly becomes deleterious, and a languid and diseased vegetation immediately follows. But if the roots grow in a soil composed of dry materials, mixed together in such a manner as to possess a series of cavities and interstices, into which the sun's rays can enter with freedom, and there exert their full power; the air in which the roots perform their functions becomes warm and purified, they absorb their food in a medium which dissipates their secretions, and a healthy and vigorous vegetation is the never-failing consequence. All borders, therefore, made expressly for the reception of vines, ought to be composed of a sufficient quantity of dry materials, such as *stones, brickbats broken moderately small, lumps of old mortar, broken pottery, oyster shells, &c.* Bones, however, on account of their prolonged effect, are by far the most valuable manure that can be deposited in a vine border. They should be buried in the soil whole, and as fresh as possible. Every variety of size may be procured, from the smallest bone of a fowl to the largest bone of an ox. The small bones will decompose in a few months, but the largest will remain for twenty, thirty and even fifty years, before they are entirely decayed while the intermediate-sized ones, according to their respective kinds, will be continually decomposing in succession for a great number of years, yielding thereby a constant supply of nutriment of the most valuable description. It is worthy of remark also, that every bone, whether small or large, after it has been deposited in the soil a few weeks, will begin to yield, by the decomposition of the gluten on its surface, a steady supply of nutritious matter, and continue so to do until it be resolved into its constituent parts and form part of the soil itself.

#### FACTORY BATHS.

From the Penny Magazine.

In the autumn of last year I established some warm baths, which have been brought into very general use, and have contributed materially to the health, comfort, and cleanliness of the people. The bathing-room is a small building close behind the mill, about twenty-five feet by fifteen. The baths, to the number of seven, are ranged along the walls, and a screen about six feet high, with benches on each side of it, is fixed down the middle of the room. The cold water is supplied from a cistern above the engine-house, and the hot water from a large tub, which receives the waste steam from the dressing-room, and is kept constantly almost at boiling temperature. A pipe from each of these cisterns opens into every bath; so that they are ready for instant use. The men and women bathe on alternate days,

and a bath-keeper for each attends for an hour and a half in the evening. This person has the entire care of the room, and is answerable for every thing that goes on in it. When any one wishes to bathe, he comes to the counting house for a ticket, for which he pays a penny, and without which he cannot be admitted to the bathing-room. Some families, however, subscribe a shilling a month, which entitles them to five baths weekly; and others hold a *general subscriber's* ticket, which always gives them admittance to the room. I think the number of baths taken weekly varies from about twenty-five to seventy or eighty. During the first four months (from November to February inclusive) the average was about seventy-five weekly. I pay the bath-keepers two shillings and sixpence and two shillings a week; and I believe this amount has been more than covered by the receipts. The first cost of erecting the baths was about eighty pounds.

#### PORK RAISING—EXERCISE USEFUL FOR SWINE.

From the Maine Farmer.

Mr. Phinney's remarks and experiments (no guessing) prove that swine kept in ordinary growing condition only, for the first nine months, or half their life, have exceeded in weight fifty pounds those kept high and fat the whole time, though at nine months old the latter were the heaviest. They were all one litter. Three were kept so as to exercise and root in the compost heap, or in squealing condition, as some farmers would say, for nine months, while the other three were kept fat and in a close pen for the same time. They were all slaughtered in one day at 18 months old, having the last nine months been kept precisely alike. Mr. Phinney, like a man who reasons and thinks, attributes the increased weight mostly to exercise. The benefits of exercise are well known in all animals, man not excepted. If all were to bring up their children on rich food, without exercise, our race would soon become Lilliputians; and so with all other animals. This is worth knowing, as it saves much expense, and in swine 50 lbs. of pork into the bargain. It must also aid in making manure; if mud, thistles, bushes, &c., &c., are placed for those which are kept ordinarily to root over.

Pork cannot be afforded at 6 or 7 cents per pound by any one who does not raise roots, squashes, pumpkins, and who does not let his swine run out to pasture, or on a clover patch three or four months in summer, or does not mow clover grass for them and place it in their yard, or on the compost heap, &c. I suggest these ideas for those who may feel interested in the subject.

N. B.—Were I asked, what farmer could afford pork lowest, and make the raising of it a good business? I would answer, in a word, he who makes the most manure from his swine, and who raises the most roots, squashes, pumpkins, apples, &c., and who looks well to the breed.

## FRONT YARDS—SHRUBBERY—FLOWERS.

From the Franklin Farmer.

While the farmers are vigorously preparing to engage in the important and busy operations of spring, they should not neglect those employments of the *taste* that contribute so much to the beauty, pleasure and comfort of a country residence. Don't suppose from the caption of this article, that we are going to advocate an inutile, unproductive expenditure of time and labor; for if you do, we shall address ourselves to your wives and daughters—God bless them. We hold it the duty of every good farmer to render his *home* as happy and agreeable as possible; to combine the solid comforts of life, with the elegant pleasures of taste. We do not urge the sacrifice of substantial enjoyments to those of the taste or fancy—we would secure both; and he who is most successful in obtaining the one, is most likely to secure the other. Let every farmer, therefore, appropriate a liberal allowance of ground for a front yard to his house. It should be expansive enough to permit the execution of a regular design, in laying out the lines for walks, groves, rows of trees, shrubbery and flowers. It should be handsomely graded, sloping downwards from the house, in front and on each hand. Set it in blue grass, and of course enclose it by a neat, substantial paling or fence, painted white. In the selection of the trees, shrubbery and flowers, consult the taste of your "better half;" and don't spare any expense she may require, in order to gratify her taste. If she even fancies exotics, send abroad for them, though we should like to see our native botany more appreciated; for, be assured, every tree, shrub or flower, will give you and your family a joy and gladness more exquisite than any derivable from the sordid enjoyments of wealth. A taste for trees, and plants, and flowers, is the love an enlightened mind and a tender heart pays to nature; it is a peculiar attribute of woman, exhibiting the gentleness and purity of her sex; and every husband should encourage it; for his wife and daughters will prove wiser, and happier, and better by its cultivation. Who does not venerate and love some tree, or rose, or honeysuckle, planted, it may be, by the hand of some absent or departed mother, or sister, or brother? and who would not protect them with a holy reverence, as mementoes of a hallowed love as well as contributors to the gratification of an elegant taste? The writer remembers well the vine planted by his mother's own hand, when he was a little child. Its tendrils now cling to the topmost branches of a tall tree in the front yard; and he never revisits the scene of his childhood, without gratifying some of the holiest emotions of his nature by sitting under its shelter and recalling the earliest and happiest associations of his life. And there too, clinging about the columns of the porch, is the coral honeysuckle, shading the evening window, with its rich and delicate clusters of flowers; and at every footstep along the border, are the many-hued flowers, planted by a sister. And there also, along the line of the enclosure, are the rows of peach, pear, plum, cherry, apple, quince and ornamental trees, planted by his own hand, when but a boy. They now, like the writer, who planted them, have grown to maturity.

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Every year they pay rich return of delicious fruit, or beautiful and fragrant foliage and flowers; and every returning summer, as he pays the accustomed visit to the homestead of his youth, he enjoys a rational pleasure in the mere sight of them, infinitely greater than the gratification of the most fastidious palate. It is a great joy, to go to each tree, and, as it were, renew an acquaintance begun in the earlier years of our youth, and rejoice in the full strength of manhood—'tis the very poetry of a gentle and gladsome and nature-loving heart. And these are modes of enjoyment which every one should provide for himself and for those who are to come after him.

We have deemed such an article as this necessary to many of our Kentucky farmers. There are too many of them who sacrifice to a supposed utility all the enjoyments of which we have spoken. We have known some plough almost up to the walls on all sides of the house, which seemed to have been taken from some other place, and set down in the midst of a corn field. Such a taste is extremely vulgar.

We have but two or three suggestions further on the subject, leaving to the taste of the farmer the plan of the improvement we desire all to adopt. The row of trees next the yard fence should be large forest trees, such as the black locust or elm. The passage from the front to the road should either be through a woodland pasture or a grass lawn, neither of which should ever be devoted to the plough. Be content with the pleasure and the pasturage afforded by such land—they are profits enough. The woodland pastures of Kentucky, are doubtless more beautiful than the classic groves of Arcadia. Where there is but a lawn in front of the house, the farmer should plant an avenue of trees. For this purpose, we recommend the elm; but the utilitarian will prefer the locust, a handsome ornamental tree, indeed, and producing a most valuable timber. But who is the Goth would think of felling the trees of an ornamental avenue for their timber?—none but one thrice-steeped in barbarism. The elm is the finest ornamental tree of our forest. Its venerable trunk, its graceful boughs, its early, rich and beautiful foliage, and its entire freedom from the least appearance of stiffness, should render it the classic favorite of the woods. It is surprising that it is not more prized as an ornamental tree.

We will add but one remark more, fearing our readers may deem the length of this article an encroachment upon more important topics. Never permit the suggestions of a momentary cupidity to induce you to graze your front yard. The grass may look luxurious and tempting, and it may seem "*a sin*" to lose it; but better to mow or shear your yard than to graze it. A cow or horse will, in one hour, destroy the growth of years. Nothing is more provoking, to the man of taste, than to see the trees he has planted, the vines and the flowers he has nurtured for years, destroyed as *fodder for beasts*. O, 'tis horribly vulgar.

## BLUE WASH FOR WALLS.

Two pounds blue vitriol, 1 pint slack lime, small piece of glue. Dissolve the vitriol and glue

in boiling water, and wet your lime with the blue water. Have it the consistence of white-wash, and put it on in the same way.

#### A BRILLIANT STUCCO WHITE-WASH.

From the Genesee Farmer.

Many have probably often heard of the brilliant and lasting white-wash upon the east end of the President's house at Washington city. The following is the recipe for making it:

"Take clean lumps of well burnt lime, say five or six quarts, slack the same with hot water in a tub, covered, to keep in the steam, pass it in the fluid form through a fine sieve, add one fourth of a pound of whitening or burnt alum, pulverized—one pound of good sugar, three pints of rice flour made into a thin and well boiled paste, and one pound of clean glue, dissolved by first soaking it well, and then putting it into a small kettle, which should again be put into a larger one filled with water, and placed over a slow fire. Add five gallons of hot water, the whole mixture.

"This wash is applied, where particular neatness is required, with a painter's brush. It must be put on while warm, if upon the outside of the building—if within doors, cold. It will retain its brilliancy for many years. There is nothing of the kind that will compare with it. About one pint of this mixture will cover a square yard upon the outside of a house, if properly applied. If a larger quantity than five gallons is wanted the same proportions must be observed in preparing. Coloring matter may be added to give it any required shade."

#### NEW EDITION OF LIEBIG'S ORGANIC CHEMISTRY.

[The following letter from Prof. Webster, though not sent to us for publication, will best serve to announce what he wishes. We shall be gratified if he can be aided as he desires.—ED. F. R.]

To the Editor of the Farmers' Register.

Cambridge, Mass., Sept. 3d, 1841.

I am greatly obliged to you for your politeness in forwarding the numbers of the Register and the Essay on Calcareous Manures. I have read them with great interest, and have been much struck by many of your remarks on Liebig's views.

The publisher has requested me to attend to the publication of a second edition immediately, as he has orders for many copies. I should prefer delaying, until I hear from Liebig, in reply to the communication I have made to him; but the call for the work is such, that the publisher will not wait. I expect however to receive matter in time for insertion in the appendix.

Any results of the application of Liebig's principles which you can furnish me with, will be received with thanks; my only object in causing the work to be published here, being to have it in the hands of those who will put the principle to

practical test, and to aid in advancing our agriculture.

Should you see fit to insert a short notice that a second edition is in press, and that the communication of any results, from persons who have engaged in any experimental operations, are much desired by me, you will perhaps increase the usefulness of the work. They may be addressed to Mr. John Owen, University Book Store, Cambridge, Mass. I am, very respectfully, yours, &c.

J. W. WEBSTER.

#### CHARCOAL FOR DISEASED LUNGS IN HOGS.

From the Franklin Farmer.

*Mr. Editor:*—As the rearing and fattening of hogs has become a business of great importance to the west, and especially to our own corn growing state; and as new and terrible diseases have made their appearance within the last few years, among that class of our domestic animals, I, as a common sufferer with my brother farmers, have been trying to ascertain the cause of, and remedy for, the one which I have suffered the most by, and which I shall call your attention more particularly to. It is admitted I believe by pathologists, that diseases may and do change their type in the same latitude, and become more and more malignant as the population becomes more dense and the country becomes older; thus our own intermittent has degenerated into the more deadly typhous fever; thus that which we once called quinsy or swelling of the throat in swine, has now assumed a more malignant type, and requires a different treatment; the cause is the same, but the effect is not always instantaneous or accompanied by the same symptoms or results. I think it may be safely assumed that most of the diseases, if not all, that hogs are liable to, are produced by sudden transitions from heat to cold; and as they do not, like most other animals, perspire through the pores of the skin over the whole surface of the body, but through small orifices on the legs and throat, which are constantly liable to obstruction, and especially in the winter season, when the animals in large numbers bed together, producing great heat and free perspiration for a short time, but from the restiveness of their nature they are often changing the position first assumed, all tending to clot the mediums of respiration, and thus lay the foundation of disease and death, by alternating between heat and cold through the winter. Ordinarily the weak of the herd are the first to die. This may be chargeable to their inability to change positions, subjecting them to the crushing weight of the whole number in the bed; or to their long subjection to the great heat engendered by the common mass, until they are called to partake of the morning food. This, as we have stated, formerly produced enlargement of the glands of the animal's neck, which often ended in inflammation and death. Now, the same cause produces a very different effect, and although it is still strangulation, yet the inflammation falls with its whole weight upon the lungs, and if both tubes of that organ are affected, death instantly ensues; if only one, the animal may live a long time, but never recovers unless the remedy that I shall pre-

sently suggest, or one equally potent, be applied. The symptoms where the attack is violent, are a seeming sense of suffocation, great indisposition to move, a deep crimson color, approaching to purple, all over the body, and if forced to move only a few paces, the animal will pant as if worried by dogs in hot weather. If the attack is less violent they will take more exercise with seemingly less pain, will throb in the flanks in much the same way that a horse will when exhausted by fatigue and hard usage, are generally inattentive to their company, are inclined to eat earth rather than their accustomed food; such generally live a long time, but never recover. I now proceed to point out the way to prevent the disease, and to cure it if taken in time: Do not suffer your hogs to herd together in large lots in cold weather; never suffer them to sleep in hollow trees; if you have sheds for them to sleep under let them be set so low that they cannot in great numbers heap together; in dry hard-freezing weather let them have some succulent food, such as apples, potatoes or turnips, but especially let them have plenty of salt and charcoal; this last is a cure for the disease above described, if administered before they entirely refuse to eat. It is known to almost every one, that charcoal is a powerful antiseptic and absorbent, and that hogs will search for and eat it with eagerness, and especially in banks of leached ashes, and so they will unassociated with ashes, if at first you will break it up into small lumps and pour a little salt and water over it. I have tried the various means in common use, such as tar, antimony, sulphur, &c., and never had one to recover its health until I tried the charcoal, and I have every confidence that it will succeed with others as it has with me, and if it does, I shall be well paid for this communication, feeling as I do, that no man ought to live for himself alone. W.

#### GROWTH OF THE VINE IN ENGLAND.

From Hoare's Cultivation of the Vine.

It is not too much to assert that the surface of the walls of every cottage of a medium size that is applicable to the training of vines is capable of producing annually as many grapes as would be worth half the amount of its rental. Every square foot of the surface of a wall may, in a short space of time, be covered with bearing wood, sufficient to produce, on an average, a pound weight of grapes, and I have frequently grown double that quantity on a similar extent of surface. Nor must it be supposed that a single vine requires for its training a large portion of walling. That very common notion has, no doubt, arisen from the universally defective method of pruning and managing; whereby the wood is suffered, and indeed encouraged, to extend itself most disproportionately beyond the capability of its fruit-bearing powers. I scarcely ever allot more than from forty to fifty square feet of surface for one vine; and, unless the soil and situation be very superior indeed, a single vine will require a space of time, not less than twenty years at least, before it will possess a sufficient degree of strength to enable it to mature annually a greater quantity of grapes than can be trained on the last-men-

tioned extent of surface. On a wall only twenty-five inches in height, and eighteen feet in length, I have for years trained a vine that is a perfect picture of fertility, the whole surface of the wall being every year literally covered with fine grapes close down to the very stem of the plant. It will thus be seen that small detached portions and vacant spaces of the surface of walls, which in innumerable instances are deemed of no value, and are therefore neglected, may be turned to a most beneficial account.

#### WHEAT AND PEAS, ALTERNATELY.

From the Franklin Farmer.

Professor Eaton states, in his Agricultural Survey of Rensselaer County, that on the Knickerbacker estate in Schaghticoke, the soil of which may be considered as the standard of excellence, containing 15 per cent. of animal and vegetable matter, and a large proportion of carbonate of lime, the following simple system of rotation is pursued:

The rotation method which has always been adopted by this family, (they have occupied it one hundred and twenty years, and five generations have been born upon it,) has been in the following simple order. Certain fields have been alternately devoted to wheat and peas. Those fields are sowed to peas in April. Immediately after the peas are harvested, it is ploughed three times, and sowed, from the 10th to the 20th of September, to wheat. After the wheat harvest it is pastured until winter; but no grass or clover seed is ever sown upon it, as these grow up spontaneously in great abundance. Sometimes oats and flax are substituted for peas. Thus a crop is harvested on each wheat field every other year,—one year wheat, the other peas, oats, or flax. Though no manure is ever applied to this land, it has yielded from twenty-five to thirty bushels of wheat per acre every other year, for ages past.

Certain other fields are devoted to Indian corn, potatoes, &c. In the culture of these there has been nearly the same uniformity. 1st. Corn and potatoes. 2d. Spring-sown grain. 3d. Wheat. Thus corn returns every fourth year.

The whole of Schaghticoke flats, consisting of almost two thousand acres, is very similar in quality, and cultivated in a similar manner. It is wholly river alluvion, in which the Hoick and the Tomhanick unite their waters.

#### THE EIDER-DUCK IN ICELAND.

From the Dillon's Winter in Iceland and Lapland.

The whole of the hill to the west of the house was strewn with nests of ducks. So much do these interesting birds feel their security in Vidoe, that five of them had chosen as their location the ground under a narrow bench that runs along the windows of the house; and so perfectly fearless were they, that, without moving away, they would peck at the hand that disturbed them. The rising ground is particularly favorable for the birds to build on, being covered with hollows and inequalities, that serve to protect them from



the weather, and only require the addition of down to convert them into nests. The drakes are easily known by their white and black plumage; but the dark hue of the females makes it difficult to distinguish them from the holes in which they sit. Owing to their lying close, I have frequently trodden on them, without their warning me of their presence till the mischief was done. The drakes, though by no means wild, will not allow themselves to be handled so freely as the ducks, and mostly keep together on the top of the hill. As soon as a nest is completed, it is usual to remove the greater part of the down, while the bird is away feeding; and this operation is repeated a second, and occasionally a third time. On her return, the bird makes up the deficiency thus created by stripping her own breast; and, when her stock is exhausted, she calls on her mate to add his portion, which will bear no comparison with the sacrifice she has made. The same sort of spoliation is practised with regard to the eggs, care being taken that three or four are left; for should the bird on her return find the nest empty, she will desert it, and not breed again the same season. About six, considerably larger than those of tame ducks, and of a light green color, are found in each nest. Their flavor is very inferior to that of hens' eggs, but they are not so strong as to prevent their being made into omelettes. The average quantity of down obtained from three nests is half a pound, so mixed with grass and foreign matter, that forty pounds in that state are reduced to fifteen, after it has been thoroughly cleaned. Vidoe and Engoe together produce, I believe, about three hundred pounds weight yearly; which would, if the above calculation is correct, make the number of ducks that come to these two places fall not far short of ten thousand every year. The number, however, that breed in Faxeford is small compared to those that bend their course to Breideford. The innumerable little islands that fill that bay afford ample shelter and security to eider-ducks, who seem to avoid nothing so much as any place accessible to foxes. These cunning animals are particularly fond of their eggs; but though we will give them all credit for ingenuity in getting at them, we can hardly be expected to put much faith in the story told about them by the Danish travellers, Olavson and Paulson. When, say they, the Icelandic foxes have detected any crows' eggs in an inaccessible place, they take one another's tails in their mouths, and form a string of sufficient length to reach the nest, and let one end of it over the rock. They have, however, forgotten to tell us how the eggs are passed up by these craftiest of Reynards. The separation of the down from the grosser feathers and straws occupies the women during winter. It is then thoroughly divested of particles too minute for the hand to remove, by being heated in pans, and winnowed like wheat. Should it become matted and dead, it is again subjected to a brisk heat, which restores its original elasticity, and increases its bulk. As in the case of ostriches, the down taken after death is inferior to that which the living duck tears from its breast, which prevents their destruction through wantonness. They are besides protected by the law, which punishes the shooting of them by a pecuniary penalty and the forfeiture of the weapon used. Nor are guns allowed to be fired in the

neighborhood during their sojourn; and even the corvette that brought the prince abstained in the spring from saluting him.

#### GUANO.

[After making large allowance in the following article for the exaggeration with which most new agricultural improvements are usually described, it is still a remarkable and valuable fact that animal manure has been and can be profitably imported into England from so great a distance as the eastern part of the Pacific Ocean.—ED. F. R.]

From the London Farmers' Magazine.

The importation of this substance, by Messrs. W. J. Myers and Co. of Liverpool, is mainly, if not entirely, owing to the spirit of agricultural improvement which has of late been diffused through the country. A retrospection of the state of agriculture in Great Britain shows—that while arts and manufactures have made daily, indeed, hourly strides to perfection, the far more important interest, the production of food, has received nothing but neglect; and in truth, the tillage of the soil has, until necessity compelled a change, been considered as an employment beneath the notice of science, and as such, been conducted by those from whom knowledge could not be expected nor new ideas obtained.

Within the last few years, however, the increasing population and their improved condition have called imperatively for a larger supply of food, and inquiry once commenced, the magnitude of the subject became apparent to all.

Chemistry, of which every agriculturist is the unconscious professor, so intimately connected with the progress of vegetable life, that the simplest duty of the farmer is dependent on its laws; chemistry is at length recognized as the readiest key to knowledge, and to carry out the advantages offered by its mighty aid, associations of all classes in the country have been formed, and assistance given on a scale to which no other empire in the world can afford a parallel.

The object I have now in view is to introduce to the agricultural world of England, a manure, which in another climate has been of long use, and most beneficial effect.

Guano (the name it bears) is the deposit of sea-birds on islands in the Pacific Ocean, and is found there in large quantities, being the accumulation of ages past.

Its component parts are in fact a collection of valuable manures, and the effects resulting from its use, though only what must follow the nature of its composition, are beyond all other manures whatever extraordinary.

It would far exceed the limits of this letter to detail all the experiments which have been made, or to mention all the proofs that have been recorded of its worth. It has been tried upon sixty different farms, and on every different crop; and I may say, that, not only in no instance has failure attended its application, but in every case, its produce has astonished the farmer who has tried it.

A gentleman of the name of Smith, farming

largely at Gunton Park, in Norfolk, was induced to try it on his land. He applied four bushels, about 200 lbs. weight, to a statute acre; and on the same field alongside on an equal quantity of land, applied 16 bushels of bone dust. Both were drilled into ground with the seed wheat; the guano gave 6 qrs., 2 bush.,  $1\frac{1}{2}$  peck; the bone dust,  $4\frac{1}{2}$  qrs. of wheat.

I might multiply examples, but the diffusion of knowledge on these subjects is now so general, and so many able lectures are given by which the virtues of this substance must be noticed and made known, that I prefer leaving their promulgation in abler hands than mine; and if all who come forward to aid the advancement of agricultural improvement, bring to the task the practical and scientific skill of Professor Johnston, of Durham, with the simplicity of composition which makes the study of his lectures so pleasing, the attainment of a perfect system of farming is nearer than might be reasonably looked for or supposed.

The system of its use is easily explained and adopted. It is in appearance a dry powder, and its weight is about 52 lbs. to the bushel. Four bushels mixed with one bushel of powdered (wood) charcoal, form the supply for one acre. The charcoal has the power of holding ammonia in its pores, and it has been found that the mixing and applying it with guano, has rendered the second year's crop almost as abundant as the first.

I would recommend it to be applied by different means to the earth. By drill with the seed, as shown in Mr. Smith's experiment, and from which such a favorable return was obtained; and also broadcast over the land, being afterwards lightly ploughed or harrowed in.

It should be remembered, that its diffusion amongst the earth round the roots of plants, is the object to be attained. Its composition, I repeat, is of that nature which must, under any circumstances, do good; and the trials of different modes of using it, will soon establish the one to be preferred.

For wheat, the experiment of Mr. Smith is a type of its action. On clover, turnips, barley, oats, and hops especially, it is, if any thing, more evident still; while to form a judgment from the past, the book lately published by the German chemist, Liebig, and which contains a beautiful exposition of the principles of vegetable existence, says:—"A small quantity of guano will, on the barren shores of Peru, produce an abundant crop of maize." On those barren shores, it has been used from time immemorial.

The day is near at hand, when if "sufficient manure for an acre be not carried in a waistcoat pocket," which was the prophecy of a clever writer some years back, at least its concentration will be better understood, and the application of particular food to particular plants (which when correctly understood and practised, is the foundation of successful farming) will soon be appreciated as reasonable in theory, and found on trial to be correct in practice.

And for the prosecution of improvement, how advantageous is the position of the farmer. Pestilence may sweep over the land, wars may ravage it, fire may consume, but from each calamity of man, as from every blessing he enjoys, there spring

new causes to excite his gratitude; and in the destruction of the vilest herb at our feet, as in the lingering decay of objects the most beautiful, and which we mourn to witness, we shall find but the change of condition necessary to return their nourishment to the earth, that, in its turn, it may bring forth fresh food for the living creatures that are upon it; and from the enterprising spirit of the British merchant, and the knowledge which makes it available as well to his fellow countryman as to himself, the farmer will obtain all the assistance he can require. I might cite many proofs, but that the guano, which is more immediately connected with these observations, affords the strongest evidence of the fact. When we consider that the great body of the English agriculturists were ignorant even of its existence—that it was the opening of a new trade—under circumstances of at least some doubt and risk, the greatest credit is due to the Messrs. Myers, by whose exertions, and through whose instrumentality, this new and valuable auxiliary has been obtained. From the union thus effected between commerce and agriculture, there cannot fail to spring the happiest results, and at this particular juncture more especially, such partnership of advantage will be of use.

It is a circumstance most gratifying to me, that being the first to introduce the nitrate of soda among the farmers of England, the guano should likewise pass through my hands. I believe it will be found of great benefit, and it will lead those who use it to reflect upon the condition and composition of matter, when they will find that there is scarcely a substance which the eye can rest on that is not available to their use. That such inquiry may arise should be the earnest wish of all who would maintain the happiness, and preserve the high standing of their country.

A. MACDONALD.

3, St. Mildred's Court, July 30.

Analysis of guano—100 parts.

Bone earth	-	-	-	30 $\frac{1}{2}$
Sulphates and muriates	-	-	-	3
Lithic acid	-	-	-	15
Ammonia	-	-	-	15
Other organic matter	-	-	-	36 $\frac{1}{2}$
				100.0

#### OBJECTIONS TO THE OAT AND TOBACCO ROTATION.

To the Editor of the Farmers' Register.

September 11, 1841.

A communication in the May number of your journal, over the initials H. M., in which I recognize an old and esteemed friend, recommends a system of tobacco after oats under a two-field rotation. Taking this, together with a former essay from the same excellent pen, I perceive that H. M.'s opinions are based upon the practice of one of the most intelligent and successful agriculturists in Virginia, Wm. Old, esq. But with this accumulated weight of just claim to high and indisputable pretension opposed to me, I must nevertheless be permitted to dissent to the system.

H. M. tells you, as I understand him, that in entering on this course, it is important to the judicious application of labor in the tobacco crop

you should first make your lots rich, by manure, of course. They are to be then *kept up*, after tobacco, indeed improved, by oats. If a certain amount of tobacco must be made annually, and you are limited by invincible circumstances to 2 lots, I admit the propriety of the practice: but if this is not the case, and there is room for three, why give an oats lay the preference over a heavy one of clover, which will rarely fail to succeed tobacco if sown in February; and I consider that clover, on account of its early protection to land from sun and evaporation, as well as its fertilizing properties, has no equal as a lay. Oats, maturing rapidly, with an exhausting crop of seed, and drying up at once, can not be so considered; and if turned under at maturity, as they must be to produce the most fertilizing effect, a naked fallow is exposed to the injurious influence of the sun at the hottest season of summer. Again, the rotation is too short to allow of an effort of nature in the reformation of soil. But the crowning objection with me to the system is, that you give up a large portion of the profits of your labor in preparing for and cultivating this expensive crop, in losing the best preparation known for wheat and clover. Why not then, friend H—h, *stretch* your rotation to three lots, even if they are a little *rolling*, (which I agree is objectionable,) clear an additional one, or buy of a neighbor? or, if these are inadmissible, divide by three instead of two, and bring yourself to the abjured and scouted system of three fields—tobacco, wheat, clover?

A. M. H.

#### ON MAKING SUGAR FROM INDIAN CORN STALKS.

To Dr. J. W. Thomson, President of the Agricultural Society of New Castle County.

Wilmington, 2d mo. 25, 1841.

Having been requested to furnish some account of the process for manufacturing sugar from corn, I cheerfully comply in giving all the information, on the subject so far as I am at present acquainted with it. The introduction of every new manufacture must necessarily be a work of time; errors and difficulties continually obstruct our course, even where we have all the advantages of experience to direct it. The making of sugar from beets in the large way commenced in France about 30 years ago; yet not more than one-third of this period has elapsed since the business has become important from its extent and profit. These remarks are introduced as some apology for the imperfect state of the communication I have now to offer. Scarcely one year has passed since the first idea was suggested in relation to this peculiar plan for making sugar; and there has not been sufficient time for those exact experiments necessary to satisfy the careful calculator. In one case I obtained from a small piece of ground at the rate of 100 pounds of sugar per acre; but other experiments, made since, have conclusively shown, that had a different mode of planting been adopted the product would have been increased ten fold. The manner of raising the corn and making the sugar is as follows:

The corn is planted in rows 2½ feet apart, and

the stalks are left to stand in the row 3 inches one from another, it is then cultivated in the usual manner. Some time in August or as soon as the stalk shows a disposition to form grain the ears must be taken off, this operation must be carefully attended to, as upon it entirely depends success. After this there is nothing more to do until the crop is ready to be taken up, which will generally happen in September, the stalks are then cut up at the root, stripped of their leaves, and taken to the mill, where the juice is pressed out between iron rollers, in the same way usually employed with the sugar cane. Lime water about the consistency of thin cream is then mixed with the juice, one spoonful to the gallon, it is left to settle one hour, and then poured into boilers which are covered until the liquid approaches nearly to the boiling point, when the scum must be taken off. It is then boiled down as rapidly as possible, taking off the scum as it rises. As the juice approaches the state of syrup it is necessary to slacken the fire to avoid burning. The boiling is generally completed when 6 quarts are reduced to one, it is then poured into coolers or moulds and set aside to crystallize. When this process is gone through the sugar is to be separated from the molasses; and the whole operation is finished. The process here detailed gives the quality of sugar you see in the samples. If required it can be afterwards refined as other sugar. The use of animal charcoal and the employment of steam in the process of evaporation, as is common in the manufacture of beet sugar, would, I am confident, produce white sugar at one operation.

From what is known on the subject, I fully believe that an acre of good ground treated as above described will yield at least 1000 pounds of sugar—probably more. The value of the fodder taken from the stalks and of stalks themselves after passing through the mill, will be more than an equivalent for the whole expense of cultivation and keeping the ground up. The fodder produced in this way is much superior to that usually made, from its containing a greater quantity of saccharine matter.

The project for introducing the manufacture of beet sugar into the United States is one which has received much public as well as private attention. Government and people have united in their efforts and worked zealously to bring it about, but apparently without the least success. How is this? must we admit that we are inferior to the French in any thing whatever? this will not be allowed. There is another supposition which if correct will account for our failure: perhaps their beets are better than ours. French writers tell us of obtaining 4, 5, and even 6 per cent. of sugar from the roots, but these results are 4, 5, and even 6 times better than any which I have been able to obtain. In short, the whole business of making sugar from corn contrasts so favorably with the manufacture from beets, that I cannot but think it will obtain the preference wherever the climate will bring the former plant to perfection. Some of the differences may be enumerated as follows: 1st, the corn is clean and agreeable to work with, while the beet is not. 2d, the machinery for extracting the juice from beets is not only more costly, but is more liable to get out of repair. 3d, the beet juice contains a much greater proportion of foreign and injurious

matter, decomposition commences almost immediately after it is pressed out, and if allowed to go on to any extent will entirely defeat the making of sugar. 4th, the preparation of saccharine matter contained in equal quantities of corn and beet juice is as 3 to 1 in favor of the former, therefore the same difference will be found in the amount of fuel necessary in evaporation. 5th, beet sugar when obtained is inferior in quality and loses a larger per cent. in refining. 6th, corn is a native of our country, perfectly suited to the climate, a true American, and is in fact the finest plant in the world; the author of "Arator" (Col. Taylor of Virginia) used to call it our "meat, meal and manure." We now add sugar to the list of its valuable productions.

We only need a full developement of the resources of our own country to render us perfectly independent of every other. Respectfully, yours,  
WM. WEBB.

From the Southern Agriculturist.

LIST OF THE AGRICULTURAL SOCIETIES OF SOUTH-CAROLINA.

Edingsville, June 15th, 1841.

Dear sir:—I believe the following to be a correct list of the Agricultural Societies of South Carolina, with the names of their Presidents:—

1. State Agricultural Society of S. C.; Whitmarsh B. Seabrook, President.
2. St. John's, Colleton, Agricultural Society; William G. Baynard, President.
3. Beaufort Agricultural Society; William Elliott, President.
4. Agricultural Society of South Carolina; —, \* President.
5. Agricultural Society of Barnwell; Hon. Angus Patterson, President.
6. Agricultural and Police Association of St. Andrew's; (name of the President unknown.)
7. Agricultural Society of Sumter; Hon. John P. Richardson, President.
8. Agricultural Society of Pendleton; Edward Harleston, President.
9. Monticello Planters' Society, Fairfield; Hon. William Harper, President.
10. Agricultural Society of St. Helena; Jos. J. Pope, President.
11. Cambridge (Abbeville) Agricultural Society; Gen. Gillman, President.
12. Fairfield Agricultural and Horticultural Society; Osmond Woodward, President.
13. Wateree (Kershaw) Agricultural Society; Colonel James Chesnut, President.
14. Agricultural Society of Abbeville; George McDuffie, President.
15. Fishing Creek (Chester) Agricultural Society; Alexander Pagan; President.
16. Agricultural Society of St. Luke's; Dr. Jeremiah Fickling, President.
17. Greenville Agricultural Society; H. G. Johnston, President.

The last seven societies have been formed within a few months. Respectfully, yours,  
WHITMARSH B. SEABROOK.

\* Lately deceased.

RENEWING OLD HANDSAWS.

From the Franklin Farmer.

I am in possession of an improvement which, if you think worth communicating to the mechanics and farmers, is at your service. In the year 1813, in Harrison county, Ky., I had a very fine handsaw, which some of my apprentices rendered unfit for use. She had what is termed by mechanics a spring or broken back, or joint in her, and was thrown by. I tried several experiments to remove the spring and at last fell on the following plan:—I took a blacksmith's hand-hammer with a smooth face, and laid the saw on a smooth anvil, and hammered it lengthwise where the spring or joint seemed to be. I hammered it in the centre of the width, which removed the joint, and she was straight and stiff as ever, and was no more liable to have a spring or joint than any new saw, and performed as well as usual. If the hammer and anvil are smooth, no one will ever observe that it has been done. I have straightened a great number of useless saws thus and made them good as new, and have communicated this method of doing it, to many of my brother mechanics in Kentucky and other states. And now, as a mechanic and farmer, have thought for several years of having this information published to the world, for there are thousands of handsaws thrown aside as useless, for want of a knowledge how to restore them to usefulness.

J. H. WENTWORTH,  
Millwright of Kentucky.

A THIBETAN YAK.

From the London Farmers' Magazine.

The Thibetan yak brought to Calcutta by Mr. Hufnagle is one of the most curious animals that we have ever seen. It is at present on the premises of Mr. Adam F. Smith, and the proprietor courteously permits those who are fanciers of such objects to inspect this tenant of the Himalayas. It seems a connecting link between three very different zoological genera. It has the head of an ox, the body of a goat, and the tail of a horse. Its osteology differs from that of the ox, having one more rib. The cold climate of which it is a native, its resting place being among the snow, renders Calcutta particularly trying to this animal. It is a mere object of curiosity, but on the same premises Mr. Hufnagle has four Lepcha cows, from Darjeling which we consider likely to improve our breed of low-land cattle far more permanently and effectually than any importation that has yet been made. A bull of the same stock would be a still more valuable gift to the vicinity. These cows have the slightest possible rudiment of a hump, and the ears are rather large, thin, and pendulous, as in the Nagore breed; otherwise in frame, in fineness of head, lightness of bone, and superiority of udder, they approach closely to some of our best English breeds. To look at the black cows a casual observer would conclude that they were of the best kind of the Welch breed: whilst the one which is brindled white and brown, looks much like a Devonshire. They are altogether a most promising source from whence to derive improvement to our Bengalee cow and ox; and the

remark naturally arises to the mind of every one who inspects this really very superior breed, how has it arisen that these animals have until now remained unknown within a journey of seven or eight days from Calcutta? The only answer is—most people go through life with their eyes shut. We hope Mr. Hufnagle will fully carry out his intention of breeding from these cows not only by a Nagore but by an English bull, and our desire is still greater, that a Lepcha bull should be brought to the presidency. We saw the cows during the hottest period of the day, and, though in not the best sheltered of sheds, they did not seem to suffer from the heat; whilst the Yak, though in a much cooler place was panting extremely.—*Calcutta Courier, May 22.*

A day or two since we noticed the yak, or kash-gow, brought to Calcutta by Mr. Hufnagle, and which may be seen on the premises of Mr. Adam F. Smith. At that time we had been unable to meet with any notice of its habits, but since then we have found the following highly interesting particulars in a work just published—"Lieutenant Wood's Journey to the Source of the Oxus."

"The yak is to the inhabitants of Tibet and Pamet, what the rein-deer is to the Laplander in northern Europe. Where a man can walk, a kashgow may be ridden. Like the elephant, he possesses a wonderful knowledge of what will bear his weight. If travellers are at fault, one of these animals is driven before them, and it is said that he avoids the hidden depths and chasms with admirable sagacity. His footing is sure. Should a fall of snow close a mountain pass to man and horse, a score of yaks driven ahead answer the purpose of pioneers, and make, as my informant expresses it, 'a king's highway.' In this case, however, the snow must have recently fallen, for when once its surface is frozen and its depth considerable, no animal can force its way through it. Other cattle require the provident care of man to subside them through the winter. The most hardy sheep would fare but badly without its human protection, but the kash-gow is left entirely to itself. He frequents the mountain slopes and their level summits. Wherever the mercury does not rise above zero, is a climate for the yak. If the snow on the elevated flats lies too deep for him to crop the herbage, he rolls himself down the slopes and eats his way up again. When arrived at the top he performs a second summer set, and completes his meal as he displaces another grove of snow in his second ascent. The heat of summer sends the animal to what is termed the old ice, that is, to the regions of eternal snow, the calf being retained below as a pledge for the mother's return, in which she never fails. In the summer, the women, like the pastoral inhabitants of the Alps, encamp in the higher valleys, which are interspersed among the snowy mountains, and devote their whole time to the dairy. The men remain on the plain, and attend to the agricultural part of the establishment, but occasionally visit the upper stations, and all speak in rapture of this summer wandering. The kashgows are gregarious, and set the wolves, which here abound, at defiance. Their hair is clipped once a year in the spring. The tail is the well known chowry of Hindustan, but in this country its strong, wiry, and pliant hair is made into ropes, which, for

strength, do not yield to those manufactured from hemp. The hair of the body is woven into mats, and also in a strong fabric, which makes excellent riding trousers. The milk of the yak is richer than that of the common cow, though the quantity it yields be less."

#### ON BRAN AS MANURE.

From the London Farmers' Magazine.

To the Editor of the *Mark-Lane Express*.—In confirmation of a letter that appeared in your paper on July 19, respecting the analysis and use of bran as a manure, I beg to state the following facts:—In 1839, some bran had been thrown on a meadow carelessly and inconsiderately, and wherever so thrown, the marked improvement in the cut of the grass was so great as to draw attention to the fact; indeed, the benefit was greater than I ever saw from any other manure, when applied in such quantities, and at a cost that would be likely to leave a return for the outlay. This induced my giving it more attention in 1840, when I applied one-third of a ton to an acre, at a cost, at the time, of 37s.; the return was an increase of half a ton of hay to an acre over the ground not so manured, equal last year in value to 3*l.*, and the after-math was doubled, which I consider was worth 10s. per acre to me, and to all persons short of feed (which was generally the case in that year) it would have proved of still greater value. Thus the account stands:—

Cost of bran	-	£ 1 17	Increased value of	
Profit per acre	-	1 13	hay	-
		3 10	Do. of after-math	0 10
				3 10

On the whole, it appeared so beneficial and remunerating, that I have this year drilled some with my turnips; the soil is a sandy loam; the quantity used is a quarter of a ton per acre, at present worth 1*l.* 2s. 6d., being at the rate of 4*l.* 10s. per ton, whilst other portions of the field have been dressed with yard manure. Unto the present time, I am not able to detect the slightest difference; the portion where the bran is used being quite equal to the dunged ground; but when the crop is matured, and in its greatest perfection, I will not fail of making a further report.

In applying the bran, I have damped it to prevent its blowing away, or else have chosen a damp day without wind; but since the letter above alluded to appeared in your paper, I have heard of its being drilled with the turnip seed quite dry, and that it has run remarkably well.

On the whole, I feel pretty certain that the moderate cost, the great facility of many farmers obtaining it from his neighboring miller, its easy application, and its good result, will soon induce it to be reckoned among the most economical, and therefore the most beneficial of the manures that has lately called for the consideration of the agriculturist.

J. WELCH.

Steep, near Petersfield, Aug. 1841.

## FECUNDITY OF RATS.

From Fothergill's Philosophy of Natural History.

The principle of increase is much more powerful, active and effective in the common gray rat, (*mus decumanus*, L.) than in any other animal of equal size.

This destructive quadruped is continually under the furor of animal love. The female carries her young for one month only; and she seldom or never produces a less number than twelve, but sometimes as many as eighteen at a litter: the medium number may be taken for an average; and the period of gestation, though of so short continuance, is confined to no particular season of the year. The embraces of the male are admitted immediately after the birth of the vindictive progeny; and it is a fact which I have ascertained beyond any doubt, that the female suckles her young ones almost to the very moment when another litter is dropping into the world as their successors.

A celebrated Yorkshire rat-catcher, whom I have occasionally employed, one day detected and killed a large female rat that was in the act of suckling twelve young ones, which had attained a very considerable growth; nevertheless, upon opening her swollen body he found thirteen quick young, that were within a few days of their birth! Supposing, therefore, that the rat produces ten litters in the course of a year, and that no check on their increase should operate destructively for the space of four years, a number not far short of three millions might be produced from a single pair in that time!

Now, the consequence of such an active and productive principle of increase, if suffered continually to operate without check, would soon be fatally obvious. But the same Almighty Being who perceived a necessity for their existence, has also restricted their numbers within proper bounds; by creating to them many powerful enemies; and still more effectually by establishing a propensity in themselves, the gratification of which has continually the effect of lessening their numbers, even more than any of their foreign enemies. The male rat has an insatiable thirst for the blood of his own offspring. The female, being aware of this passion, hides her young in such secret places as she supposes likely to escape notice or discovery, till her progeny are old enough to venture forth and stand upon their own energies; but, notwithstanding this precaution, the male rat frequently discovers them, and destroys as many as he can; nor is the defence of the mother any very effectual protection, since she herself sometimes falls a victim to her temerity and her maternal tenderness.

Besides this propensity to the destruction of their own offspring, when other food fails them, rats hunt down and prey upon each other, with the most ferocious and desperate avidity; inasmuch, that it not unfrequently happens, in a colony of these destructive animals, that a single male, of more than ordinary powers, after having overcome and devoured all competitors, with the exception of a few females, reigns the sole, bloody, and much dreaded tyrant over a considerable territory, dwelling by himself in some solitary hole, and never appearing abroad without spreading terror and dismay even amongst the females whose embraces he seeks.

In this relentless and bloody character may be found one of the most powerful and positive checks which operate to the depression of this species within proper bounds,—a character which attaches in greater or less degree, to the whole *mus* genus, and in which we may readily perceive the cause of the extirpation of the old black rats of England, (*mus rattus*, L.) for the large gray rats having superior bodily powers, united to the same carnivorous propensities, would easily conquer and destroy their black opponents wherever they could be found, and wherever they met to dispute the title of possession or sovereignty.

## MANAGEMENT AND DISEASES OF HOGS.

To Chilton Allan, President of the Kentucky State Agricultural Society.

From the Franklin Farmer (1836.)

I have seen, in a late number of the Franklin Farmer, your circular address, calling upon the friends of improvement for essays upon a number of important subjects relating to the agricultural interest and pursuits of the state. Approving heartily the noble objects of the State Society, I read your address with great satisfaction; and I cannot but believe, that the action of the society will bring about the most gratifying results in improving the science of agriculture and hence the condition of the husbandman; for I cannot doubt, that every one who desires improvement himself and who would derive useful information from others, will hold himself bound to contribute something to the general stock of knowledge. There are few intelligent farmers who do not know something unknown to others, and it is by an interchange of sentiment and opinion as well as of experience and practice, that the farmers of the country will be able to see and reject the errors of their husbandry and adopt those modes instead, which lead to improvement and success. In this view, I offer an humble tribute, which at least has the merit of a well meant design of benefiting others in some respects.

The commencement of our prosperity may be dated from the period when our agriculturists turned their attention to the raising of stock for export; and as the consumption and demand have increased in a ratio with the increase of population and wants of the people of the United States, the business has become a source of wealth to Kentucky. And no where has the improvement of stock been so great and so general, nor more zeal and perseverance manifested to improve the breeds of horses, asses, cattle, sheep and hogs. In enumerating these descriptions of stock, the last is not the least important in bringing wealth to the state, and should be looked to with a fostering care and attention.

Under this belief, I humbly submit to the public through you, the following observations on the management of hogs, with some remarks on some of their diseases.

In giving my views on these subjects, I deem it important to state some of the various ways of raising, feeding and fattening hogs in different sections of the country, which, according to circumstances, soil and climate, will differ; and

conclude with my views as to the best mode to be adopted by the farmers of Kentucky under her peculiar circumstances. In Europe and many parts of the United States, hogs are indispensably kept in pens or sties, and as the numbers raised are comparatively small, there is no great expense attending the manner of feeding them; indeed, this is the most economical, cheap and convenient method of fattening that could be adopted in any country where the number fed is small. In some of the New England states large buildings have been erected for raising and fattening hogs on an extensive scale, fed almost exclusively on vegetables produced on a few acres of land, which gives a profit of 50 per cent. more than any other way in which the products of the land could be disposed of. On this extensive scale, the business is unconnected with any other, having for its object, the raising and fattening of hogs alone, for it requires the most strict attention which daily habit and the most scrutinizing observation, in time reduced to a perfect system, can give. It was ascertained to a fraction, what each hog would eat at a meal, which was measured out to him three times a day, the quantity according to age, allowing six of the same age to occupy a sty, which was regularly littered and cleaned out once a day. The amount of vegetables required per day, and the necessity of the different varieties coming on in due season, would require great attention. At the first view of the subject, we would conclude that a piggery conducted in like manner in Kentucky, would be equally profitable. But not so—there would be this difference:—The price of pork and lard in Boston is more than 50 pr. ct. higher than in Louisville: and the profit accruing from the superabundance of manure, which is worth from two to three dollars a load in the New England states, will amount to a large sum, which with us would be excluded from the estimate, as it will bring nothing here on sale, though useful to the land on which the hogs are fattened. In 200 hogs annually sold, these causes would produce a difference of perhaps three thousand dollars in favor of the New England piggery.

Say 200 hogs at 200 lbs. each,	40,000	
lbs. pork at 10 cents in Boston		\$4,000
For their manure	- - - -	1,000

\$5,000

40,000 lbs. pork at Louisville at 5 cents	2,000
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Leaving a difference in favor of the N.

E. piggery	- - - -	\$3,000
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In no way could an extensive piggery be made profitable to us but by being connected with a distillery. The expenses would then be much lessened; for it would require but a few vegetables or a little meal added to the slop of the distillery to make the swill highly nutritive. They might be put to graze in the summer and swill given them occasionally, and again put up in the fall.

The manner of feeding and fattening hogs now generally adopted in this state, seems to me to be well calculated for our method of cultivation. Taking into consideration the products and the great number of hogs fatted for other markets, together with the great number of beef cattle annually grazed and fed, the system is complete. In

winter they are amply supplied with food from the refused corn and pudding of the cattle—two or three hogs to each head of cattle finding thus abundant sustenance. In the spring, when the cattle are no longer fed, the hogs are put on the exuberant clover field, which was sown for the double purpose of enriching the land and supplying rich food for the cattle and hogs. In due time, when the clover becomes hard, and unfit for the hogs, it is given up to the earth, and they are removed to the rye fields, there to fatten and complete another system of manuring, so admirably adapted to our lands and our wants. So soon as the rye field is consumed, the corn field is ready to receive them\* and in due time they are ready for market, leaving the fields and pastures richer than they were.

Although this arrangement is good for feeding and fattening, yet there are other important matters in relation to their raising and health, which in no wise should be neglected. Experience has taught me, that no matter how many pigs a sow has over six, they should be reduced to that number, always retaining the large and healthy ones; for I can and will demonstrate that six pigs will make more pork at 12 or 18 months old, than eight would of the same litter—and eight will make more than ten. Give to the six the food which you would give the eight or ten and you will find, in the result, the truth of my statement proven. It is essential that pigs be kept fat while sucking, and to have them so, six is a better number than eight or ten. At weaning time, or when sixty days old, the time when the sows decline in milk, particular attention should be paid to the pigs, having them regularly fed either with corn or swill, for at this juncture, they are unaccustomed to root for themselves and will rapidly lose their flesh and their health, and their growth will be retarded, if left to shift for themselves. If they are kept fat during the fall, when provisions are plenty and cheap, they will keep thrifty and well through the winter, on very moderate feeding; but I prefer liberal feeding throughout. The food is by no means thrown away, as you will have more pork and not any more corn consumed in the end.

Hogs should be kept free from diseases; particularly the disease of worms, which is very pernicious and a constant attendant on poor hogs. Liberal feeding at all times is the best preventive; but when it is not in the crib, brimstone, spirits of turpentine, or tar mixed with their food will remedy the evil. All hogs are more or less subject to worms; but some are so overcharged, that their intestines are literally filled with them, and unless they are extirpated, it is throwing away corn to feed them, for in this condition it is almost impossible to fatten them; they will consume twice as much as a hog will not troubled with them, as the nutritious juices are taken up by the worms, and their fetid excrement is all that is left as a miserable substitute for sustenance.

\* We presume our writer does not intend to be understood, that the hogs are turned into the corn field; for though this practice may be adopted by some, the more general custom is to put them in a large pen adjoining, into which the corn is thrown. If the corn is not sufficiently ripe when the rye is consumed, old corn is fed to the hogs; and indeed, the feeders generally, we believe, prefer beginning to feed them on old corn after they are put up—introducing the new rather cautiously and gradually.—ED. F. FARMER.

The most fatal disease of hogs is the swelled throat or quinsy. This too, is easily prevented. I have long been of the opinion that it proceeds from indigestion, caused by feeding on hard grasses or clover in their declining state; and my successful practice as a preventive for the last eight years is a strong confirmation. Yet it matters not concerning the cause, provided there is a remedy. The disease in the last stage is highly inflammatory, but at no time infectious. It is an accumulation of matter formed between the glands of the jaw, which continues to inflame till the hog dies by suffocation. The disease may be cured before and after the matter begins to form; but as it may be more satisfactory to state my experience and knowledge on the subject, I will give an instance as coming under my observation and conclude with my practice as a cure and preventive. In 1830, I discovered the disease among my hogs by the death of one of my fattest. As soon as possible, I had them removed from the clover field, and put in a spacious pen, where they were fed with as much corn as they would eat after it was glazed with tar and as much ashes put on as would adhere to the grains. They still continued to die, till I lost to the number of fifteen. This great number dying out of eighty, caused me to doubt the efficacy of the remedy or that the disease was too rapid for its effect. Shortly after, they were put up to fatten, which they did very readily, and I was left in doubts as to the effect of the medicine, until the day I butchered, when I found lumps of coagulated matter in the jaws of many, about the size of a hazelnut or larger, without any signs of inflammation around them. I then came to the conclusion that they would have died had it not been for the remedy applied, and that the disease of those that died had advanced too far to be cured by any remedy. Observing that hogs kept in sties never had the quinsy, I attributed it to the wholesome quality of food they ate, and on the contrary, the cause of their having it out of sties, to the pernicious qualities of hard dry grasses. Since 1830, I have invariably given my hogs during the spring and summer months, when grazing, slop or ewill once a week or oftener, consisting of kitchen slop with cooked vegetables of various kinds, apples, &c., with bran or a little meal, mashed to a paste, salted and cooled off by adding a quantity of water, and occasionally brimstone or saltpetre. Since the above date, my attention has been directed to the raising and fattening of hogs on the products of a small farm, and I have never yet lost a hog by this disease nor in my recollection by any other. My opinion is still further supported as to the cause of the swelled throat, by its being less frequent since the practice lately adopted in putting the hogs to graze when the clover is young and tender, and taking them off when it is old and tough.

Every body knows that the young and old hogs should be kept apart in winter; and yet how shamefully this important matter is neglected by many. Young and old, great and small are crowded together, day and night, mashing and smothering; and yet many will look on with heedless regard at the great destruction of the young stock, without separating them. When young and old are fed together, the old will always get more than their share, thereby the young become

poor and diseased, making little or no progress in growth.

The breed of hogs best calculated for our general purposes is yet to be ascertained. Within a few years, great exertions have been made, at considerable expense, to procure the best breeds, but whether any of them answer our expectations, I think very doubtful. The breeds imported here, were improvements made to suit the purposes of others under different circumstances, different soil and climate, different food and management and under a different method of disposing of the pork; and according to our present mode of farming, thus differing from the methods abroad, whence these hogs have been brought; and our surplus pork being chiefly driven to the south, I think ultimately they will not do except in the event of the successful completion of the rail-road from Lexington to Charleston. Then the smaller and earlier matured hogs, the Byfields, the Berkshire, the Bedfords, &c., will be more profitable than the larger breeds. But should this all-important improvement to the west prove abortive, the hog that will be best calculated for our interests is yet to be improved by some judicious cross from our present great variety of breeds. The fat varieties, as the Bedford, Berkshire, &c., from their early propensity to fatten, are best for family use and home consumption; but owing to their incapability to travel, they must measurably give way to the longer legged hog, until the rail-road from Lexington to Charleston is complete.

BIRD SMITH,  
*Member Ky. State Ag. Society.*

#### REMARKS ON THE SOILS OF PART OF SURRY COUNTY.

*By the Editor.*

A large proportion of the lands of the lower part of the county of Surry (or that part east of the Court-House,) have some peculiar features, which are but little known to strangers, and seem to be but little appreciated by the residents; and which ought to render these lands interesting and profitable subjects for agricultural improvement.

The eastern half of the county, to which these remarks will be mostly confined, is bounded by James river or the north, and by Blackwater river, or swamp, on the south. The general surface is remarkably level; but in the northern part, from which the water flows towards James river, the streams generally pass through pretty deep ravines or valleys, the sides of which form short and steep hill-sides, which intersect the table land, and form exceptions, and in strong contrast, to its general level surface.

The level of the much obstructed Blackwater river is much higher than that of James river, and therefore the descent to it much less from the intervening ridge, or highest table land. Hence the tributary streams are more sluggish, and run through shallower depressions; and the water therein forms swamps, or "slashy land," more often than freely running streams. The heads of the small streams which are discharged toward these opposite directions leave in the middle a dividing strip of higher land, which will be



termed the *ridge*—though it is the most level land, and not perceptibly more elevated than the other table land.

The soil of all this body of land (disregarding small exceptions on the river banks and other peculiar localities,) may be divided into two general classes, of light sandy soil and the close and stiff soil. Large tracts of these two kinds are intermixed throughout the whole surface of table land and gentle slopes; and the transitions from one to the other are often quite abrupt. Many farms are almost entirely of the one soil, and others of the other; but most of those which are more than 3 or 400 acres in size have a portion of each kind of these soils of very different texture.

None of the land, of either kind, could have been rich, before cultivation; and all, after long and the usually exhausting cultivation, is quite poor, or otherwise unproductive. The light land, from its greater ease of tillage, has been most worked and most impoverished.

The stiffest lands are there called *pocosons*, and all inclining to stiff approach more or less to the stronger characteristics by which a real pocoson tract is known. Before being injured by cultivation, all this kind of land was abundantly supplied with vegetable matter, but was rarely productive, even under its earliest or best cultivation, because of the want of draining, and the want of calcareous matter in the soil. The universal excess of surface water, through winter and spring, necessarily caused bad tillage and poor products, even where the food for plants was present in excess; and the deficiency of calcareous ingredient completed the destruction and waste of the vegetable food of plants as early and completely as possible. Yet both these defects might be supplied with as much ease, and profit, as could almost be desired.

The pocoson land, in its natural state, is covered by a heavy forest growth, of large and excellent pine timber, and of oak; the white oak being most abundant as the land is stiffer or wetter, and red oak as the land is less stiff and wet. The surface is closely covered with an undergrowth of very tall whortle-berry bushes. These marks, of themselves, would sufficiently indicate a highly *acid* soil, greatly needing, and greatly to be improved by, the application of calcareous matter. But draining is absolutely necessary; and, strange to say, it is scarcely attempted, or thought of, as a necessary general system, on these lands. They are even generally cultivated flat, or without ridges and water-furrows, which would alone serve to vent much water, if merely run in a proper direction. Some small parts of the pocoson land are naturally drained, by having more inclination of surface, and being bordered by lower land, serving as channels to convey away streams. And some of these spots have been very productive and durable under cultivation, though of precisely the usual texture and objectionable qualities (except wetness) of the pocoson land in general.

It is not subterranean water or springs that affect this land in the least. It is merely the excess of rain water, which cannot flow off, because of the almost perfect level of the surface of the land, and cannot sink, because of the perfectly impervious nature of the subsoil. Hence, all this land, though dry, and generally much too dry in summer and the early part of autumn, is either

saturated or inundated with rain water in winter and spring. There could be no more effectual causes for most laborious tillage, and unproductive and speedily exhausted fields; and also, as it would seem, for a sickly region—though this last effect is not so apparent as the others.

The soil of the stiff land is not clay, but a gray loam, of which the sandy portion is so finely divided as to render the soil stiffer and closer than clay alone would be. But this would not be a cause of wetness, by retaining too much water, if the subsoil were pervious. This is however a yellowish, close and adhesive clay, for the depth of 10 to 15 feet, or more. Below lies quick-sand (or almost pure sand filled with water,) into which the shallow wells are sunk. If our climate were as moist and cool as that of Scotland, these lands could not be tilled at all, as is now done in Surry, and would in time be converted into a great peat moss, more like the Dismal Swamp than arable land.

The most valuable thing connected with this region is the great quantity of very rich and easily accessible shell marl; with which most of the the lower Surry lands might be covered at a very small cost—and to the least accessible of which it might be carried cheaply enough to make the operation profitable. The effect would be abundantly striking, even on the most worn and impoverished lands, where the benefit of marling would of course be the least. But if applied to the wood or virgin land, before cultivation, and combined with proper drainage and tillage, the degree of permanent fertility induced would be beyond the belief of those who are content to work these lands without either means of improvement.

The marl generally shows at the surface (or it "crops out") on the hill-sides of all the ravines and valleys leading to James river, and is found on almost every farm on the space between the summit ridge and the river. The ridge alone, making a strip usually of 3 to 4 miles wide, has no marl in sight, or other than lying too deep for use. Between that strip and Blackwater, the marl is also very abundant, though not often exposed to view, owing to the absence of deep ravines and steep hill-sides. But the general surface is so level, and the marl to be had is so rich, that it would be as cheap to apply marl to fields two miles from the pits, as in many usual cases at half a mile. Moreover, when the tract passes through forest land, temporary wooden rail-roads might be cheaply constructed, on which the labor of draught would be greatly reduced.

Though marl has been but little used in Surry, in general, compared to the inducements for its more extensive use, still particular individuals have done enough, even if not the most judiciously, to show excellent and remarkable effects, to gain great increase of farming profits, and to indicate clearly to those who understand the mode in which marl acts, the much greater profits which would be certainly gained from a more judicious mode of application. Many proprietors have marled extensively, and have been for years reaping the profits.

Both the light and the stiff soils have been generally much improved in product by marling. The former however are too light for wheat and clover, even after being marled. On the stiffest

and wettest lands, neither marl nor any thing else can do much good, until draining has removed the great evil of excess of surface water, which prevails for half the year—and which serves to increase the injury from drought, and a hard sun-baked surface, in the other half.

There is but little draining attempted on these lands, and that little is of very little effect. It is only to remove ponds and the longest standing water. The great body, which is merely a muck of mire through winter, and is necessarily ploughed wet in spring, and of which every acre needs draining, is left to be dried by the sun; and less than half a crop is obtained by the regular application of at least a double amount of tillage labor. And this excess of labor is far more costly than would serve to drain the land effectually. All that is necessary for this end, (on land already long cleared and tilled,) would be to plough the land when in good state as to dryness, into good beds or ridges, of width suitable to the designed culture, with deep and clean water-furrows, and in the directions best suited to discharge the water into lower levels. We go upon the supposition that the farmer is inexperienced in draining operations, and does not know practically the use of levelling instruments. After the land has been so ploughed, (which ploughing of course should be the preparation for the next succeeding crop, and which, therefore, would be no additional cost,) he may wait for the next heavy rain to show, by the standing and the flow of water, where the cross ditches are needed, and where they should lead the water. More knowledge and experience would direct a better mode of procedure; but even this alone would save enough subsequent labor, and add enough to the products, to pay for the improvement in the first year.

In the newly cleared pocoson land, incumbered by stumps and filled with roots, the drainage, to precede cultivation, would require more judgment, and very much more labor. But the increase of reward would be still greater than of the difficulties. We entertain no doubt, that if such land as we heard described were both well marled before being cleared, and well drained before being cultivated, it would yield for ever after, to judicious and easy tillage, four times as much product as it usually does to the most laborious, disagreeable, and *disheartening* tillage operations. We know of no subjects for agricultural improvement more inviting, and promising better profits, than the improvement and proper management of these lands. But, without marling and draining, we would deem the land not worth accepting as a gift, on the condition of its being held and cultivated.

The prices at which the Surry lands are held are in general high enough for the usual condition and products of the lands; but very low if compared to the facilities and inducements for improvement. They range from \$1.50 to \$10 the acre. And the higher estimates do not seem to be so much determined by the intrinsic value of the land, as by favorite location, or something else other than calculations of products and profits. Some of the best river farms would sell higher than \$10, and some small and poor tracts, even lower than \$1.50. But these are rare exceptions. The demand of particular individuals serves to fix prices more than the real advantages

of the land. Thus a tract sold at public auction may command \$6 the acre, because one or two neighboring land-holders may wish to add it to their estates—and if the same land had been a few miles distant, without such adjacent neighbors, but in all other respects as desirable, it might not have commanded above \$3 the acre. In a word, there is no regular demand for land, in general, but only such as is caused by the uncertain and varying wants of a few individuals. And there is very little inducement to a non-resident to purchase even the cheapest of the lands, which are sold at auction at almost every court day, because they are generally too small, poor, or, under other disadvantages, to be worth settling upon or of holding alone.

#### COLLECTING FOSSIL SHELLS.

Being desirous of making a collection of the shells and other fossils of the marl beds of lower Virginia, (or elsewhere,) we request of our friends and readers who have carried out marl this autumn, to collect and send to our office the most perfect specimens of all varieties of shells and bones which their pits may furnish. Each shell should be wrapped separately in paper, to prevent injury from rubbing in transportation, and the whole packed in a box or keg. The locality of each parcel should be stated. As some small return for the trouble thus incurred by our friends, any specimens of marls of which they may desire to know the strength, and that may be put up, properly labelled and sent with the shells, will be analyzed, and the results reported to the proprietors.

When the shells are very small and numerous, it will be well to send some lumps of the marl containing them. It will be safest not to clean the marl from the larger shells very closely, for fear of injuring their surface.—ED. F. R.

#### BOARD OF AGRICULTURE.

To the Editor of the Farmers' Register.

Seeing, in a late number of the Farmers' Register, a proposition to arrange some plan for the commencement of the meetings of the Board of Agriculture established by the last legislature of Virginia, I take the liberty of suggesting that each member of the board lately appointed by the executive should propose to the executive such a plan as he might think proper, and request the executive to convene the board as may be thought best by the majority. The meeting of the legislature will afford an opportunity of obtaining any aid that may be thought necessary by the board to effect the contemplated object: therefore I would propose that the first meeting of the board should take place at an early day of the next session of the legislature.

Aug. 19, 1841.

ONE OF THE BOARD.

## OIL SOAP—WILLIS' SYRINGE.

From the New England Farmer.

*Mr. Putnam,—Sir:—*I have lately noticed advertisements and communications on oil soap, for destroying insects upon rose bushes, small trees, &c. It ought to be known by those who cannot obtain the oil soap, that strong suds made of common soft soap will answer most of the purposes attributed to the former. It kills the snail, keeps off the rose-bug, and I have preserved my plants by it, for several years, against the attacks of the curculio. In sprinkling the plant, it is necessary to do it early in the morning, while the dew is on, because it is difficult to wet a dry green plum.

Willis' brass syringe is recommended for using the soap. I would not willingly be instrumental in discouraging the use or sale of that almost indispensable implement; but, for the purpose of throwing suds upon small single trees and shrubbery, a smaller syringe than any I have seen of Mr. Willis' make, is much more convenient and economical. Go to a tin-shop and get a tube made ten or twelve inches long, which will hold from a gill to half a pint, with three or four small holes in the end to produce as many streams, and the jack-knife of any Yankee of common ingenuity will make a good piston in a few minutes. This will save your suds, is managed more readily, and with equal if not greater effect upon such trees.

R. NEWTON.

Worcester, Aug. 2, 1841.

## LATE WHEAT.

To the Editor of the Farmers' Register.

Berkeley, Sept. 16th, 1841.

My last effort with seed wheat procured from Winchester was a decided failure. The grain was obtained last fall, and was as fine as I could have wished; but I had at the time doubts as to its success, as I have rarely succeeded on the Berkeley lands with bearded wheat; and I was unable to procure any of the smooth-headed kind, such as I approved. That which I purchased was exceedingly slow in maturing, and my experience satisfies me, as a general rule, that all late wheats with us are worthless; if not ripening at the usual time, they invariably are affected with rust. Indeed my own observation leads to the conclusion that, be the season what it may, the wheat which ripens first is nine times in ten the best.

Marl is doing much for our lands; but operates much more efficaciously on the soft, friable lands, than on the stiff, tenacious clay.

BENJ. HARRISON.

## A SIMPLE MEANS OF PREVENTING THE FAILURE OF THE POTATO CROP.

By Mr. Robert White, Farm-overseer to David Anderson, esq., of St. Germain's.

From the Quarterly Journal of Agriculture, for September.

It will be allowed by all practical farmers that the potato sets when cut discharge a large quanti-

ty of fluid or juice, the loss of which has a tendency to weaken the germinating powers of the sets, and at the same time exposes them to undergo fermentation in the heap.

In 1833, we had our seed-potatoes from the parish of Penicuik. When cut, I desired the women to riddle a shovelful of hot lime on every basketful of new cut sets. They were turned over and over again, until the lime was taken up by the sets, when they were put into a heap three or four feet thick; where I have kept them for two or three weeks. The hot lime had the effect of stopping the flow of the juice, and of encrusting a strong skin on the sets. This crust, on the one hand, preserves the sap being drawn away from the sets in a dry season among dry soil, and of repelling wet in a wet season among damp earth. The sorts of potatoes experimented on were dons and blues. The land was in a fine moist state, well worked, and the dung well made, and they were ridged in the last week of April. There was a regular braird, and the crop was fine.

In 1834, our seed-potatoes, dons and blues, were obtained from the same parish, and treated in the same manner. The ground was very dry, the dung dry, and the heat great when they were planted; so dry that the dust was flying from the strong clay-soil when drilled up. The braird was regular and the crop fine, with the exception of eleven drills which were planted without the sets being limed, and which proved a complete failure, and of some ox-nobles which also failed.

In 1835, we did not change our seed-potato. One-half of the land was dunged on the stubble in October, and the other half in spring, part of it on strong clay, and part on light loam. The dung was very dry in spring, the land not well worked, and the planting finished in May. The braird was regular and the crop fine, although there was a general failure of the crop throughout the country.

In 1836, the seed-potato was obtained from the neighborhood of Edinburgh. They were buffs, and treated in the same manner as described above. The land, a fine dry light soil, was in oat stubble after old grass, and full of wire-worm. The dung was very dry, the land well worked, the braird regular and the crop fine. There was none planted without the lime this season.

In 1837, the seed-potato was obtained from Leader Water dons and blues. A fine light loam was well worked, and dunged with well made dung. The crop was planted in the second week of May, and proved a fine one. None planted without the lime this season.

In 1838, the seed-potatoes came from Gala Water buffs, and which were planted in the last week of May, on land not well worked, and the dung very dry, but the braird was without a blank, and the crop fine. Two bolls of seed-potato from Peeblesshire were tried without lime and proved a complete failure, the insects having eaten the sets to a shell. These were planted in the last week of May.

In 1839, the seed-potatoes were from Gala Water buffs, and which were planted in the last week of April, in strong clay soil, not well worked, and the dung very dry, but the braird was very regular, and the crop fine. There were none planted without lime this season.

In 1840, again, the seed-potatoes were from Gala Water, done and blues, which were planted in the end of May in a light loam full of wire-worm, but well worked, and the dung very dry. The crop was fine. A few drills were tried as an experiment without the lime, and they were so complete a failure that they were ploughed down.

#### OPERATIONS OF LICHENS.

From the British Farmers' Magazine.

To the lichens may well be applied the title of *vernaculi*, or bond-slaves; which Linnæus fancifully gave to the sea-weeds, regarding them as fettered to the rocks on which they grow. For the lichens seem, as it were, chained to the soil which they labor to improve, for the benefit of others, although they derive no nourishment from it themselves. The mode in which they prepare the sterile rock for the reception of plants which require a higher kind of nourishment, is most remarkable. They may be said to dig for themselves graves for the reception of their remains when death and decay would otherwise speedily dissipate them; for, whilst living, these lichens form a considerable quantity of oxalic acid (which is a peculiar compound of carbon and oxygen, two ingredients supplied by the atmosphere,) and this acts, chemically, upon the rock (especially if of limestone,) forming a hollow which retains the particles of the structure when their term of connected existence has expired. The moisture which is caught in these hollows finds its way into the cracks and crevices of the rocks; and, when frozen, rends them by its expansion into minute fragments, and thus adds more and more to the forming soil. Successive generations of these bond-slaves continuously and indefatigably perform their duties; until at length as the result of their accumulated toil, the barren and insulated rocks, or the pumice or lava of the volcano, become converted into fruitful fields. For, when Flora's standard has once been planted on tracts thus claimed, they are soon colonized by plants of other tribes. The mosses, ferns, and other cryptogamia follow them; and at last, by the growth and decay of successive generations of plants, a sufficient thickness of soil is produced for the nourishment of the luxuriant herbage and the support of the lofty forest-tree. And thus, by the labor of these apparently insignificant plants, men are enabled to reap their harvest and to supply themselves with timber from the forest; and cattle increase and multiply on what was formerly but a naked and desolate rock.

#### THE DUTCH COMMERCIAL SYSTEM.

From the European.

One of the leading principles of the Dutch merchants is short credit. It is extremely difficult for a bill-broker on the Bourse, at Amsterdam, to obtain discounts for paper unconnected with

actual real transactions, whose particulars are known to the party discounting. The merchants of Holland have never been charged with any want of enterprise, or deficiency in spirited speculation. They have, on the contrary, been at all times ready to engage in any adventure, however hazardous or however remote, provided there was held out a reasonable prospect of even a moderate profit. We are, therefore, entitled to infer that commercial enterprise among the Dutch does not necessarily depend on long credits as an originating or sustaining stimulus. It gives us a strong proof of the well-working of this system, that bankruptcies are extremely rare in Holland—greatly more rare than in any other mercantile community. As an instance of this, in point, notwithstanding the loss and interruption to all sorts of business occasioned by the French, in 1795, the bankruptcies in that and the subsequent season were not, comparatively, so numerous as in England in ordinary years; while, during the subsequent convulsions arising from the separation of Belgium, no suspicion was ever entertained of the solvency of any considerable mercantile house in Holland or Flanders. Bankruptcy in Holland is tantamount to mercantile death; for no bankrupt can again go into or carry on any respectable business.

#### PROTECTION OF THE HOP-PLANT FROM INSECTS.

From the British Farmers' Magazine.

Mr. John Hobbs, of St. Ives, Cornwall, effects the destruction of all the small insect tribes which infest the hop-plant, by the erection of rails of a particular construction, smeared over with coal-tar, or the saturation of the poles with a solution of copperas.

#### COAL DUST.

Mr. Webster, of Ipswich, filled garden pots with fine coal dust, and placed a variety of plants in them, such as potatoes, onions, &c.; in all of which the vegetation was vigorous and luxuriant. Strawberries, onions, and a variety of useful and ornamental plants thrive extremely well in this material, which is clean, neat, inoffensive, without odor, incapable of harboring insects, well adapted for in-door floriculture, and enduring for a long period.—*Trans. of Society of Arts.*

#### PRELIMINARY REMARKS ON THE FOLLOWING NOTICES OF GRASSES.

Having very recently had the benefit of the company and aid of a friend, M. Tuomey, esq., who possesses that knowledge of botany of which we have often before confessed our entire deficiency, we have been enabled thus to be informed and to have determined the botanical names and characters of grasses and other plants of which

before we knew, at most, only the vulgar or provincial names used in this particular region. It is true, that the scientific names of most of the valuable cultivated grasses had been correctly determined before, and have been treated of in different articles in this journal. Still, of some other grasses and other plants, remarkable for good or bad qualities, as much ignorance remained as to names as in other respects.

The few and irregular notices which we may offer, (only in the absence of information from others better qualified to afford it,) will consist merely of statements of such qualities and characters of the plants in question as are deemed interesting or useful to be known to farmers, because of the bearing on agriculture. And, even in these respects, we may be expected to fall into many and great errors, owing to mistakes, to the want of sufficiently careful foregone observation, and perhaps also from forgetfulness of things from which we have been almost entirely absent for the last nine years. Therefore, we beg that our own contributions to the work of fixing the nomenclature and characters of grasses may be considered as both wanting and open to correction from other persons; and we shall be gratified to have knowledge on the subject extended by the pointing out our mistakes of ignorance, if they exist, as well as in any other way.

For the botanical names, and for every scientific fact, which may be used in our own contributions, we shall be indebted to Mr. Tuomey. The manner of our combined investigations was this: His attention was requested to such particular grasses or weeds as information was most needed upon, and he gathered the specimens, if they were to be found so late in the season, (after the 10th of September,) or if not already contained in his previously gathered collection of dried specimens of grasses. Not having expected such useful and ready assistance, we had gathered but very few earlier specimens; and not only for that reason, but also for want of opportunity, and still more for want of the knowledge to distinguish species with the absolute certainty necessary for their selection. Indeed, upon such previous trials as our scant opportunities offered in the summer, we found uncertainty even as to particular specimens of grasses, which we had long well known as seen growing in quantity. And still another difficulty we have but recently learned from Mr. Tuomey, which we had not before suspected. This is, that of some common grasses, which had been supposed to be of but one kind, there are two or more species or varieties, either of which (and perhaps the least important of them) we might have gathered, and furnished to a botanist as the only known grass of the kind.

We should have been better pleased to follow than to precede the first promised labors of Mr. Curtis and others, for this general object. However, we trust to have something from them before long. In the mean time, the notices which we shall offer will be presented as in continuation of the communication of Dr. Darlington, published at page 114 of this volume of the Farmers' Register. In these remarks there will be no attempt at formal and regular description; and in any others, from other sources, there need be none. If facts are presented, and errors corrected, it will be unimportant as to the form in which the information may be presented.—ED. F. A. R. REG.

#### NOTICES OF GRASSES AND WEEDS.

(Subject resumed, from p. 114 of Farmers' Register.)

#### WIRE GRASS.

*Synonymes and provincial names.*—*Wire grass*, in lower Virginia—*Cane grass*, in New Hanover, N. C.—*Joint grass*—*Bermuda grass*, of South Carolina? Botanical names given below.

To the Editor of the Farmers' Register.

The grass you pointed out to me as the "*wire grass*" of lower Virginia is not the *Triticum repens* of the botanists, but the *Cynodon dactylon* of Persoon, the *Digitaria dactylon* of Elliott, and *Panicum dactylon* of Linnæus.

The following description, from Eaton and Wright's Botany, is very accurate.

**CYNODON.** Glumes two-valved, lanceolate, spreading: paleæ 2, longer than the glumes, the outer valve larger, somewhat oval, and surrounding the inner one: rudiment minute, pedicelled: scale truncate: spike digitate and fascicled: flowers solitary.

*C. dactylon*, creeping: spikes digitate (4-6) spreading: keel of the glume scabrous: leaves hairy on the margin and base: sheaths hairy (glabrous?)

The *C. dactylon* is a native of Cornwall, England, the south of Europe, the shores of the Levant, the East Indies, and New South Wales. Sir W. Jones, in his Asiatic Researches, mentions the beauty of its flowers, and its sweetness and nutritious quality as pasture for cattle.

Dr. Darlington, p. 499, Farmers' Register, classes the *Cynodon dactylon* among the grasses valuable "in fixing and keeping together the blowing sands of the sea-coast, by their creeping suckers and tough entangled roots." He also says, "The roots are employed in India in the preparation of a peculiar beverage." Perhaps it would be difficult to give a more concise and accurate popular description of this plant, than the one given by Dioscorides, who describes it as a plant with "jointed creeping shoots, throwing out sweet roots from their joints; and pointed, hard, broad leaves, like a small kind of reed, which are the food of cattle."\* The digitate

\* Rees' Cyclopædia. Art. *Panicum*.

spikes of the plant resemble those of *Digitaria* so closely as to be easily taken for a species of the latter, so that a person observing the flowers, without attending to the general habit of the plant, would be likely to pronounce it "*crab grass*," the name applied here to the different species of *Digitaria*, two of which are common, the *D. sanguinalis* and *D. filiformis*.

M. TUOMEY.

#### Remarks.

The account above sufficiently points out a very great mistake into which I had fallen in regard to "*wire grass*;" and my confident assertion of that mistaken opinion served to mislead those much better informed, and who knew wire grass only by loose description. At page 116 of this volume, in the commencement of my account of the wire grass of lower Virginia, which Dr. Darlington had spoken of as the *poa compressa*, it was stated (as a correction of his mistake) that the wire grass was the couch grass of England, or *triticum repens*. I was long ago led into this error by the many general notices of couch grass by English writers, which seemed to apply exactly to wire grass; and I was confirmed in the mistake by having made the inquiry of an intelligent farmer, who was a native of and had been a cultivator in Great Britain, and being answered that these grasses were the same. Upon showing the wire grass to Mr. Tuomey, he saw at once that it was not the *triticum repens*, of which he had a dried specimen in his herbarium which he gathered on the Eastern Shore of Maryland, and which is altogether different in appearance. His views, presented above, and my previous remarks at page 116, leave nothing for me to supply here except the correction of my own errors, and omissions.

In the account referred to, it was stated, rather too broadly, that this grass "will scarcely grow except where there is enough of lime to constitute a good and fertile soil." There should have been stated a further exception, viz: that on the most sandy and dry soils, which qualities of soil are very favorable to this grass, it may be sometimes found in scattered and feeble growth, even though the soil be acid, or very deficient in the calcareous ingredient.

The power of vitality in the wire grass is very remarkable. Every cultivator of good light loams, or rich sandy soils, in lower Virginia, knows the great difficulty of killing the roots by ploughing, harrowing, and even by exposure on the surface of the ploughed earth. And I have known the gathered and removed roots, which had been kept sunk in a deep pool of water, in the middle of a barn-yard, remaining a long time, and being part of the time covered there with several feet thickness of the barn-yard litter, to vegetate when taken up and exposed again on the surface of the ground.

E. R.

#### DARNEL—*LOLIUM TEMULENTUM*.

**Synonyms.**—*Lolium temulentum*,—*Darnel* and *Bearded darnel*, in England—*Spelt*, in lower Virginia.

#### Botanical description.

**LOLIUM.** *Spikelets* many flowered, alternate,  
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distant, sessile at right angles with, or the edge to the rachis. *Glume* a single bract, except at the terminal spikelet, where there are two. *Palea* herbaceous, nearly equal; lower one awnless, or sometimes with a short bristle at the tip.—*Nutt. Gen.*

The *L. temulentum* can be readily distinguished from the *L. perenne* [rye or ray grass] by the *glume* which in the *L. temulentum* is longer than the spikelets, in *L. perenne* shorter. M. T.

#### General Remarks.

*Darnel*, or *spelt*, is a hardy annual, that grows much in the same manner and under like circumstances with wheat, rises to about the same height on ordinary and poor soils, and ripens at the same time. The plant and the seeds are larger than those of the English rye-grass, which otherwise very much resembles *spelt*. The seeds also, as enveloped in their close and inseparable husk (or *glume*), are nearly of the same size with the smaller grains of wheat, and not much varying from wheat in specific gravity. Therefore they cannot be entirely separated from wheat, either by the fan or the screen; and this, added to the peculiar deleterious qualities of the grain of *spelt* as food, cause it to be the worst weed that infests the crop of wheat. Luckily it is but a new importation to the United States, and is known as yet but in few places. It is common in Europe, and its poisonous qualities were known to the Romans, as appears from a passage in Virgil.\* Still, *darnel* does not seem to be much regarded as an injurious weed in England; and therefore it may be inferred that it is better suited to our warmer climate, or to our bad tillage. Where it has been permitted to become abundant, it is, as the writer has fully experienced, the worst of all the weeds that injure wheat by the admixture of their seeds.

I remember well that the first plant of *spelt* I ever saw, was about 30 years ago, in the county of Prince George. Its novelty induced me to gather the bunch, as a rare and beautiful, and what perhaps might prove a valuable forage grass. It must then have been very scarce in that neighborhood where it has since become, on particular farms, so abundant, and is no where entirely wanting. But though so recently a stranger, *spelt* has gained long ago the same character that cheat (*bromus secalinus*) possesses, of being the degenerated product of wheat. In addition to all other reasons against this belief, it would seem as enough to overthrow it, that this supposed conversion of wheat to *spelt* could have occurred on but few and limited localities—and if such a change took place any where,

\* "*Infelix lolium*," &c., noxious lolium, &c.—*Geor. lib. i., l. 154.*

"The bearded *darnel* is frequent in some countries, but it is comparatively rare in this [England]. It has been condemned as a poisonous plant for more than 2000 years."—*Low's Practical Agriculture.*

"There is but a solitary instance alleged of the unwholesomeness of the seeds in the entire family of the grasses, viz.: those of the *darnel*, (*Lolium temulentum*, L.) a common weed in many parts of Europe, but scarcely known in the United States; and even in this case, the deleterious effects are probably exaggerated."—*Darlington's Essay on Grasses.*

it ought to be *every where* that wheat grew, and spelt could grow. Still, the absurdity of the opinion, moresurprising than that of the same belief as to cheat, did not prevent its being very general where spelt was known. And to this was added another ridiculous and yet common belief, which served to spread these pests still more. This was, that spelt and cheat, being produced from wheat, did not spring at all from their own seeds—and therefore no care was taken by many persons to destroy seeds which they had no thought would germinate. Such folly and carelessness in a few farmers, and the danger not being enough feared by others, caused the pest to spread rapidly, and still more by the change of seed wheat from farms so infected to others. It was by a purchase of seed wheat from a crop so mixed, that my own farm was set with spelt, so as to be a serious evil for twenty years after.

When the cheat controversy was carried on actively in the agricultural papers in 1831 and 1832, I sent to Gideon B. Smith, esq. then editor of the *American Farmer*, a specimen of our spelt; and from him, for the first time, learned its botanical and its vulgar European name. It was the first time he had seen the plant, and had not known that it was in this country. Our correspondence on the subject drew forth these interesting facts from Gen. Th. Emory, that the plant was known on Kent Island, and only there (as he believed,) in Maryland; and not there until after the last war, when the British had possession of the island, and kept cavalry horses there for some time. This, added to the facts that at City Point, in Prince George county, nearly all the race horses imported from England had been landed, with the remains of their English provender, and that spelt was abundant in these two neighborhoods, renders it almost certain that in this manner the seeds were brought from England. My volume of the *American Farmer* for that year has been lost, and I here repeat the facts there stated from recollection; but believe that there can be no material variation, in that, or other circumstances that will be here added.

Though all the seeds of spelt cannot be removed from a crop of wheat, by the most laborious or wasteful fanning and screening, the greater part may be separated by throwing off with it as much or more of good wheat. Of such "tail-ends" of wheat, the refuse remnant of a crop in Prince George, very much mixed with spelt, some flour was made, and bread of it eaten by two negro men belonging to the farmer who raised the crop. They were both attacked the same night with such violent spasms, or convulsions, that their lives were despaired of. However, both recovered. Another farmer, who had part of his crop left, because much intermixed with spelt, though warned by knowledge of this occurrence, used the flour for his negroes, as only a small part of their food, and as he thought, cautiously enough to prevent any harm. Still, some of his slaves were made sick, and though much less violently, in such manner as to leave no doubt of the spelt being the cause. These proofs of the grain being poisonous convinced me of the fact, before having heard of it upon any other authority. My wheat left on hand because adulterated with spelt, was boiled to prevent the sprouting of the spelt, and fed cautiously to hogs. No evil effect was observed on them.

Whoever has not yet had his fields and wheat crop contaminated by this abominable weed, should use every care to prevent any of the seeds being introduced in purchased wheat or otherwise. If the injury has been already suffered, every care should be used to lessen it, by sowing only clean seed wheat, and preventing the increase of the growth of spelt. Making the land productive, and having the wheat to stand thick and vigorous, is the most certain mode of keeping down the growth of spelt when the seeds are actually in the land, or are necessarily sown with the wheat. And when the growth of wheat is thin and feeble, the spelt will be in proportion flourishing and productive. The same remarks apply to cheat. And hence it is that the wheat of bad and slovenly farmers, and on poor or unproductive land, is so generally believed to be changed to spelt and to cheat; while, under reverse circumstances, such conversions do not appear to take place, and perhaps the possibility of the conversion is even denied, by the raisers of these better crops.

Since writing the above, I have heard, from Richard Furt, esq., a well informed flour miller of Petersburg of long experience and extensive business, some facts in regard to spelt, which are important as confirmation of some of the views presented above. Mr. Furt, as a purchaser and miller, has been receiving and examining a considerable proportion of the wheat that has come to this market for about 40 years. He is confident that he never observed any grains of spelt in wheat brought for sale until in 1816, and then (as he well remembers) in a particular large crop of a farmer of Dinwiddie. Since, it has been gradually increasing in the samples of wheat in general; and now, more or less spelt is found in two out of three of all the wagon loads of wheat that come to this market. In Prince George, (the county adjoining Petersburg, and Dinwiddie,) where I suppose that spelt was first introduced from England, the crops of wheat were the most mixed with spelt at an early period of the time since 1816; but latterly and now, no neighboring county sends wheat entirely clear of spelt. The wheat of Lunenburg county, of all within its distance from Petersburg, Mr. Furt thinks is the least affected by the contamination. What gives value to the facts stated by Mr. Furt, in addition to his long experience and means for observation, is that, notwithstanding this and all other testimony to the contrary, he is still a believer in the convertibility of wheat to spelt—and supposes that spelt here was at first the product of degenerated wheat, and the degeneracy caused by poor land and bad tillage. E. R.

#### RYE GRASS—*LOLIUM PERENNE*.

*Synonymes and provincial names.*—*Lolium perenne*—*Rye grass*, and *Ray grass*, in England—*English greensward*, by some seedsmen in London and in the United States. For botanical description, see above.

This is a perennial grass, commonly cultivated and valued in England, sown either alone or mixed with red clover for mowing. It has been but little tried in this country, and was not enough

approved, from any known trial, for its culture to be continued. It is mentioned here merely because of its resemblance in appearance to *Lolium temulentum*, and for another reason, its having been recently introduced and spread abroad in this country (either from ignorance or designed deception of seedsmen) as "*English greensward*," and as sown for a good yard or lawn grass. For this purpose its manner of growth is altogether unsuitable; and those persons who have thrown away their labor and expense in the trial, are additional examples of the many who have been deceived and put to loss by the application of improper names to grasses, which ought to be, and otherwise would be, well known by name as well as by qualities. E. R.

## FATTENING SWINE.

From Elliott's Husbandry, 1747.

I find by experience the best time to fatten swine is to begin at the first of August, if you have old corn. Hogs will fat slowly in very cold weather: they will eat much and fatten but little: if you make a very warm house, they heat in bed and catch cold when they come out into the cold air.

To save corn, steep it in water or swill till the corn grows very soft; this opens the parts: give them the corn to eat and the water to drink in which the corn has been steeped: the hard dry corn, a great deal of it, passeth through them undigested; this is the hardest part of the corn and that which principally makes the flour. There is a tradition that if you feed one hog with corn, the dung of the first hog will fat another hog, and his dung a third. Although I believe the story to be fabulous, yet it serves to show that the sense of mankind is, that in the manner we feed swine, there is a great deal of loss.

I took the hint of steeping corn, from the advantage I once found by some corn I bought that had been shipwrecked, and lain in the water till it was grown soft.

Such is the difference in corn and in swine, that it is impossible to fix it absolutely and know certainly how much there is saved by this method. It is better than grinding, besides what we save in the toll and the time and charge of the carriage; for it is found by experience, that even bran, when steeped in water a long time, is much the better.

I asked an honest, and judicious neighbor of mine, who had leisure to try this method of steeping corn longer and with more exactness than I had done, how much he thought was saved by it? He said, at least one bushel in seven—he believed more.

Since the foregoing was written, a person of good credit informed me that there being in his neighborhood a dealer in horses, who was famous for skill in making horses fat in a short time; he desired the jockey to tell him how he did it: the secret was to mix Indian corn and oats together and soak it in water till it was soft; that in cold weather he steeped it in a cellar, that it might be kept from freezing.

My informant told me, he had made trial of it and found it did well, giving it to his horse in the

same proportion as he was wont to do of dry provender.

## SUMMARY OF NEWS.

Friday, September 3, 1841.

An individual named Thomas M. Harlup, has been committed to prison at Washington, on the charge of having been one of those concerned in the mob that insulted the President.—*Phil. Led.*

R. C. Knapp, brother of the Cashier of the Mineral Point Bank, has been arrested and held to bail in the sum of \$120,000. This is the bank in which the Commissioners could find no money. Knapp was found to be in possession of about \$100,000 in drafts, checks, certificates of deposit, bank bills, &c., belonging to the bank, most ingeniously secured under the blank or fly leaves of some books. The amount is supposed to be sufficient to render the bills of the bank worth 75 cents to the dollar.—*Id.*

The greatest fall of water ever known in Charleston, came upon us on Tuesday (Aug. 28) afternoon and night—principally between 11 o'clock in the evening and daylight. The continuous roar of the rain was like the thunder of the ocean in a storm. The quantity of water which fell from 9 A. M. Tuesday to 9 A. M. Wednesday, we learn from the Citadel, was 7 24.100 inches. The actual period during which this deluge was pouring, was not over 7 hours. The cellars in all the lower situations of the city were flooded, some to the depth of two feet, and much loss was sustained by those who had valuable groceries in their cellars. The city drains in some places were burst by the press of water. The damage to the crops from this frightful flood cannot but be great, as there was every appearance that the rain was general, and it was also accompanied by considerable wind. The business prospects for the coming season are very gloomy. The health of the city, however, continues good—probably it was never better at this season, and we have now a fair prospect of escaping the visitation of yellow fever.—*Ch. Mercury.*

The bark *Eugenia*, from Vera Cruz, brought \$81,000 in specie to New York. But no matter how much specie is brought into the United States by the course of trade, as much and more will as fast be sent abroad, by the necessary operation of the bank suspension and irredeemable paper policy.

The bill for distributing the proceeds of the public lands among the states has passed both houses of Congress. But by an amendment of the senate, its general and worst practical operation is restrained. This amendment provides that the distribution shall not take place when the tariff of duties is made to exceed 20 per cent. Thus the land distribution must either serve to keep down the exorbitancy of a protective tariff, or such a tariff will nullify the land distribution. The operation of the new bankrupt bill does not commence until next February. This will allow time for amendments at the regular session.

The revenue bill is still before Congress.

It is now considered doubtful whether the last bill to establish a national bank will ever, by passing the senate, reach the president. Should it be so however, his veto may be deemed certain—and a dissolution of the present cabinet is certain to follow.

United States bank stock sold this week in Philadelphia as low as 8½ dollars for the 100—but has since risen to 10½.



"Captain William K. Latimer, late commander of the United States sloop of war Cyane, has been sentenced by a general court martial to five years suspension, with loss of pay and rank, for cruelty and tyranny to his crew of the grossest kind."—Good! And sundry more such examples of deserved punishment are yet needed.

The Union Bank of Montreal (Canada) a swindling and bankrupt concern which has neither credit nor character, and was scarcely known of at home, had an agency office in the city of New York ostensibly to *redeem* its notes, but really, by that pretence, to get them into circulation, and then cheat the holders. This has just been done, by the redemption being declared at an end, and the notes becoming utterly worthless. This is merely doing *completely* and *throughout* what all suspending and irresponsible banks do in part, and to greater or less extent, in effect, if not by intention, according to their opportunities, and to the degree of submission of the community.

Frequent inquiries are made to know what has become of the assets of two or three of our swindling and broken moneyed institutions; to wit, the Philadelphia Loan Company, the Philadelphia Savings Institution, and the Schuylkill Bank. It is now some two years since these several institutions ceased to exist, and were placed in the hands of assignees for settlement; at least it was so with the two former. Promises were then made by the presumed honest men who took this duty upon themselves, that there would be a half or more of the amount due to creditors realized. But this, we are assured, has not been the case. The creditors, or at least some of them, and we presume all, have not received a cent, and that they ever will is a question as much in the dark as it ever was. The affairs of the Schuylkill Bank are involved in equal mystery. The *very few* who have control are doing business in their own way, or are doing nothing, and the great body of the stockholders know not whether their stock is worth any thing or not.—*Ph. Ledg.*

*By this morning's mails, Sept. 3.*

A wonderful occurrence (if not a very elaborate and foolish hoax) has recently taken place in Davidson, Tenn. A shower of what seemed to be blood and finely divided flesh fell from a small red and low-flying cloud. The space sprinkled by the shower was nearly half a mile long and about sixty yards wide. It was principally over a tobacco field, and the leaves of the tobacco furnished specimens abundantly of the substance, and also showed the course of the shower and perpendicular direction of the descent. Portions of the substance had been sent to Professor Troost, to be analyzed. The editor of the Nashville Banner, who saw them, says "they appear to be animal matter, and the odor is that of putrid flesh."

Effigies of President Tyler have been publicly burnt, with every accompanying solemnity of insult, in Louisville Ky., and at several places in Ohio, on account of his veto to the first bank bill. So much the better for the president, and the cause for which he is thus insulted. Such procedure is only to be deplored as being disgraceful to our country, and tending to degrade the government abroad.

Private letters, received in New York, give some account of alarming disclosures being made in respect to the Union Bank of New Orleans. A correspondent of the Commercial says that "in addition to the over drafts previously known, it appears that about \$800,000 more have been discovered;—one firm alone, Ogden and Southgate, having abstracted \$100,000; another individual \$50,000; and Mr. Woodruff, one of the directors, some \$15,000. Every thing, however, connected with banking in this city is kept so secret

that the public is left to conjecture the amount of the various defalcations." It was in agitation, it is said, to place an injunction on the bank.—*Phil. Ledger.*

*Friday, September 10, 1841.*

The steam-ship Britannia arrived at Boston on the 2d, bringing accounts from England 15 days later, to the 19th ult.

Great alarm has been produced throughout Great Britain of a failure of the wheat crop, in consequence of the cold and wet weather during harvest, so far as it had been heard from. Still, by private advices received here, accounts differ much as to the prospect. The price of wheat however was rising in England and the duty of course lessening. This must raise the price of grain in the United States.

"Accounts of commercial distress reach us from all parts of the country. Trade is in a deplorably depressed state; and failures in manufacturing districts, to amounts, are affairs of daily occurrence. From Manchester, Leeds, Bolton, Bradford, Glasgow and Paisley, we receive, by every post, harrowing details of the sufferings of the poor, thrown out of employment and obliged to subsist on an allowance of the coarsest food, falling short of what is allotted for the maintenance of convicted felons in our jails and penitentiaries."—*London Sun, 17th.*

It was reported by London papers that 15 ships of the line had been ordered to our coast on account of the McLeod affair. Doubtful.

"The Paris papers speak in gloomy terms of the harvest."

A most destructive fire has occurred at Smyrna. From 9 to 10,000 houses were burnt, including 8 Jewish synagogues and a number of Turkish mosques. From 80 to 40 persons lost their lives by this disaster, and more than 20,000 are left without food or shelter.

In a trial of speed on the Great Western Railway, (Eng.) the "Hurricane" locomotive passed over within two hours, which was at the rate of more than 60 miles an hour.

The price of cotton has declined.

**Free Negroes.**—In New Orleans and almost every town on the waters of the Ohio and Mississippi, measures are in progress to send off the free negroes, in consequence of the disturbances, murders and robberies, which have been committed or are alleged to have been committed by them.

**Lynchers indicted.**—"Judge Pryor, at August term of the Circuit Court, held in Grant county, Ky., called the attention of the grand jury to the *unlawful* execution of Maythe and Couch, who were taken out and hung by a mob. The Judge pronounced all unlawful and deliberate killing, murder. The executions that had taken place, were without trial, and under no law but the law of a mob, and all who were present, advising or aiding in the act, the law regarded as alike guilty. The jury entered upon the discharge of their duty, and returned into court with *nine bills of indictment of murder in the first degree*, against individuals concerned in the execution. The remarks of the judge in the charge to the Grand Jury show him to be a sound lawyer and a fearless public officer. It is to be hoped that the clergyman who so far disgraced his calling as to lend his official services to the atrocious ceremony is among the number indicted."—*Phil. Ledg.*

It seems we were mistaken, in acquitting all the officers of the Danville Bank of the robbery lately committed. The money (i. e. "promises to pay") has been recovered, and the teller, Mr. Joseph Terry, has been arrested as the thief. Of course, as in all such cases, Mr. Terry was a *highly respectable gentleman*. Hereafter, to make amends for this one mistake of ours, whenever any bank robbery occurs, we shall take it for granted, until the contrary be proved, that the undetected thief learned his trade of dishonesty

behind the counter of the bank, and by executing its regular operations and spoliation on the community.

*Another bank vault tapped and the leak discovered.*—The Cape Fear Branch Bank at Raleigh has had a portion of its funds *appropriated* (the reader may supply any more appropriate word,) by the cashier, E. H. Wingate, to the *acknowledged* amount of about \$10,000—and how much more, the directors have since been trying to find out. The first suspicion and his confession came together on last Monday, (6th,) and up to the 8th the deficit was ascertained to be about \$12,000. Mr. Wingate was not only cashier, but head and chief of the Branch Bank, there being no president except of the mother bank at Wilmington. *Of course*, he was of the *highest respectability*. No suspicion had been excited; but the president of the mother bank, finding that the times were squally, and defalcations being brought to light plentifully, and even where least suspected, thought he would make a general tour of inspection to all his branches. The Raleigh defalcation was the first fruit of his investigation. The newspapers of Raleigh say not a word about the matter. Our information is derived from gentlemen just arrived from Raleigh, and who well know the facts as there reported and believed. Would it not be a good plan to have a general official search into the accounts and funds of all *unsuspected* banks? If it were done, our summary of news and the whole "Bank Reformer" to boot would scarcely be able to present all the interesting discoveries.

*Another swindling financier caught.*—"E. Whiting, late Cashier of the Gallipolis Bank, has been arrested at Lowell, Mass., and there awaits the requisition of the Ohio authorities.

The Augusta (Georgia) Chronicle of the 2d inst. says, that rumors are in circulation that two bank clerks in Columbus have decamped, being defaulters to an amount not known, but not over probably \$100,000, nor less than \$40,000. The Sentinel attributes all these delinquencies to the suspensions. The directors set an example of dishonesty in suspending payment, and it is but too readily followed and improved upon by their servants. Nearly all of the late robberies have been perpetrated upon suspended banks.

The Augusta Chronicle says—"The Columbus Enquirer contradicts the report published by us some days since, relative to the removal of the assets of the bank of Columbus across the river to Gerard, Ala. The Enquirer says—"We repeat the assurance, that the assets of the Bank of Columbus remain where its charter placed them, under the control of its able and responsible direction, who stand ready in good faith to discharge their obligations to the community and to the stockholders. "The bank of Calumabus, and the Planters' and Mechanics' Bank, are both going on with their regular business as usual, redeeming their bills *with other current bank notes*. [A pretty mode of redemption truly! One broken and dishonored promise, redeemed by another just as bad!—Ed. F. R.] Their course in resisting the action of receivers has thus far proved not only wise but fortunate, to one of them at least. No receivers have, however qualified, or attempted in any manner to take control of any of our banks. Appointments were made which were not accepted, and there the matter ended, and so we presume will *stand ended*." [The plain English of all this is, that the broken banks of Georgia put at defiance not only the general law, but also the judicial decision which directed their assets to be taken possession of; "no receivers have qualified," and that is the way that the judgments of the court are nullified.—Ed. F. R.]

We learn that the state officers are in trouble about Wheeling notes, which are receivable for taxes, and

which, nevertheless, stand at ten per cent. discount here. [Is it not 15 per cent?—Ed. F. R.] The result of this awkward state of things will be that the western folks will pour these notes into the state treasury; which will suffer a loss of one-tenth on its means: a thing which its resources, already cramped, will not admit of. Some action will, we believe, be attempted to avoid this consequence.—*Richmond Star*.

This is one of the beauties of banking. The people pay a tax of ten cents for every dollar of these Wheeling notes paid into the state treasury! This is truly republican—to tax the whole people of the state for the benefit of a few bank corporations. We heard the other day the case of a plain farmer, on whom a bank palmed off one or two hundred dollars in these depreciated Wheeling notes.—*Petersburg Statesman*.

The revenue bill has passed the Senate. The proposed duties on tea and coffee had first been stricken out.

*The (old) United States bank finished at last!!!* On the 4th inst. it was announced that all the remaining effects of this institution had been assigned to trustees to wind up its affairs and pay its debts [if that be possible.] The stock, which had before recovered and gone above 18, immediately fell to \$8.50 the share. (Since, on the 6th, it sold for 7.50.) And this, we suppose is the last of this most infamous and most powerful, and most predatory on private interests and injurious to general interests of all banks that have ever existed.

There are no less than 15 private shin-plaster bankers in Frederick, Md. engaged in manufacturing "money" for the "dear people."—*Balt. Sun*.

The President has been also burnt in effigy in St. Louis, and hung in effigy in Nashville, for his first veto. What is in store for the second?

**THE SECOND VETO**—By a private letter (of unquestionable authority,) written after the mail closed at Washington, we have just learned that the Veto of the President to the second bank bill (we beg pardon, "Fiscal Corporation") was sent in to Congress yesterday, and that the message was then in the printers' hands. *Laus Deo!* There will be no United States Bank established, (or even "Fiscal Corporation,") during the presidential service of John Tyler. Therefore the burners and hangers in effigy, &c. &c. will not succeed, unless they take to a more direct and *vital* remedy. The scheme which has been avowed, to buy John Tyler, will not answer; the only way to get rid of him, his objections to committing perjury, and his constitutional scruples, will be to kill him! No mail from Raleigh, and of course no more particulars of the bank investigation than we learned 24 hours before.

At the Washington Navy Yard, (7th.) By the accidental explosion of a 32 lb. shell, filled with detonating powder (a new invention of Lieut. W. D. Porter,) Capt. Jacob Bright, the Master Armorer, was killed, and his body scattered in fragments.

An awful riot occurred at Cincinnati on the night of the 3d inst., by which several lives were lost, and many persons wounded. Its commencement was a quarrel and fight between a few negroes and whites, and in which one of the latter was mortally wounded. The whites assembled to the number of several thousand, attacked some of the houses of the negroes, who defended themselves with muskets. A cannon loaded with slugs was fired several times by the whites. The military finally quelled the riot, and order was restored.

The "Missourium," or skeleton of a double-sized mammoth, which has been exhibiting in the western cities, turns out to be a counterfeit, or at least so far

factitious as presenting a larger size than the well-known mastodon, of which this is in truth a specimen.

Friday, September 17, 1841.

It will be remembered, says the Philadelphia Times, that a book-keeper in the bank of Pennsylvania, named Smith, disappeared very mysteriously some time ago, with a large amount of the floating capital of that institution. The sum lost was at first stated to be \$100,000, but within a few days it has been ascertained that the old gentleman carried off one more 0, making the snug sum of one million! The Bank is making some effort to recover this, but we don't know how. Smith is in Texas.

**Another Bank Swartwouter.**—The Albany Atlas says it has information that the teller of the Mechanics and Farmers' Bank of Troy, named Jones, suddenly disappeared from the city, leaving his account minus about \$10,000.

In addition to this, the Norfolk Herald publishes an extract of a letter from Columbus, Ga., dated the 3d inst., which gives the following information:—The Western Branch Bank of Georgia, at this place, closed to-day! Thomas Moore, the teller of the Bank of Columbus, has cleared out with about \$75,000. He checked out the money of depositors by signing his name for them—"Thomas Moore, for A. B. C., &c."—*Phil. Ledg.*

The Augusta (Geo.) Chronicle of Thursday last says:—"Rumors have been afloat in this city, for a day or two, that two bank clerks in Columbus have decamped, being defaulters to an amount not known, but not over probably \$100,000, nor less than \$40,000."

The German Bank of Wooster, Ohio, has blown up, to the loss of holders to the amount of more than one hundred thousand dollars! This explosion falls with most severity, indeed almost entirely, on the farmers of the neighborhood, many of whom have exchanged almost their entire crop of wheat for the trash. Thus is the result of the labors of a whole year plundered from them in a moment. Almost the entire circulation was put afloat within the past two months, and, as would appear, for the express purpose of plundering the farmers of their crops. A correspondent, speaking of the scene presented the day succeeding the explosion, says:—"It has been a most afflicting spectacle since this morning, to see the crowd of poor mechanics and laborers around the bank, pleading for something in exchange for their faithless promises, that would procure the necessities for the sustenance of their helpless families." A paper currency has its convenience, it is true, but whether losses like this do not render its cost more than it is worth, we will leave those swindled farmers, and those who are capable of sympathizing with them, to decide.—*Phil. Ledg.*

The Bank of Steubenville, (N. Y.) has made an assignment of all its effects, and will now wind up its affairs.

The Western Bank of Georgia, at Rome, Ga., has closed its doors.

Among several favorable circumstances in reference to our currency, we notice the unfavorable fact that almost all the packets which leave this country carry away with them large quantities of specie. Notwithstanding the New York press look upon this relieving of their banks of their specie as tending to strengthen them, we confess our dullness in not comprehending their reasoning, and are quite sure that a directly opposite course of treatment would strengthen ours.—*Phil. Ledg.*

The last London packet from New York took out more than \$200,000 in specie.—*Balt. Sun.*

We observe, in the Philadelphia Ledger of the 14th inst., a call for a meeting of the "Anti-Charter Monopoly Association, No. 6," for the purpose of discussing the question, "Can we obtain specie enough, in the natural course of trade, to conduct all the business of the country, so as not to use the notes of chartered banks?" An invitation is extended to the public to attend and participate in the discussion.

Two companies of United States troops have moved upon the disputed territory of Maine.

The city of Cincinnati was under the dominion of the mob, in the riot stated last week, for more than 24 hours. The negroes, when subdued, were carried to prison, as much for their protection as for their offences. Their houses were torn down, and an abolitionist printing office destroyed, and also the property of another abolitionist. About 50 of the white rioters have been arrested.

The tenants of the Van Rensselaer property, near Albany, are again refusing to pay rent, and more trouble is commencing.

Lett, the Canadian refugee, who attempted to blow up a Canadian steamboat at the wharf at Oswego, and who escaped on his way to the states prison, has been retaken, and sent to suffer his imprisonment for 7 years.

**Naval.**—The Norfolk Beacon says orders are about to be given to have the frigate St. Lawrence, now on the stocks at the Navy Yard, Gosport, launched.

The second veto message of President Tyler arrived the next mail after our last week's publication. In tone and manner it is not so firm and decided as was to be desired. However, we trust the final result will not therefore be doubtful.

On the 11th inst., the Revenue Bill, and the Bill prohibiting the investment of government funds in state stocks, received the approval of the President.

The members of the "Harrison Cabinet," with the exception of Mr. Webster, sent in their resignations on Saturday last. On the same day the President nominated the following gentlemen:

Judge Upshur, of Virginia, Secretary of the Navy.  
Justice McLean, of the Supreme Court of the United States, Secretary of War.

Hugh Legare, of South Carolina, Attorney General.  
Walter Forward, of Pennsylvania, Secretary of the Treasury.

Charles A. Wickliffe, of Kentucky, Postmaster General.

**Florida.**—Advices from Col. Worth, received at the department of war on Saturday last, announce the surrender of Coacoochee's people, the seizure of the chief Hospitaka, with 15 of his chiefs and warriors, and the promised surrender of all his people, amounting to 320 more, on the 11th of this month.

The steamboats Patrick Henry and Rappahannock came in contact on the 9th inst., between Baltimore and Fredericksburg. Both boats sustained considerable damage.

The members of Congress, with the clerks, &c., have, during the present session, consumed fifteen barrels of ink, 83,000 quills, and 483 groce of steel pens. [How large a proportion of these has been sold?—Ed. F. R.]

**Threatened general Indian war.**—The North Western tribes exhibit much ill will towards each other. The Burlington (Iowa) Hawkeye states that the Winnabagoes have been for some time making extensive preparations for attacking the Chippewas on the north, and that the Pottowatomies have obtained the assent of 30 odd villages of the different tribes on the south and west, including the Pawnees and several

tribes on the other side of the Missouri, to engage in a war of extermination against the Sioux. They have sent the wampum to the Sac and Fox villages on the Des Moines, and the prospect of soon receiving their annuity only prevents them from joining the coalition. Gen. Chambers has promptly taken measures to put down hostilities between the tribes.

The Harrisburg (Pa.) Intelligencer states that there are at least 200 acres planted with tobacco in York county this season. The crop is said to look well, much better than any between Baltimore and Washington.

*Important from Havana.*—The correspondent of the Philadelphia Gazette, writing from Havana on the 25th of August, says that a rumor was circulating that England had demanded from the Spanish government a fulfilment of the treaty of 1823, for the suppression of the slave trade, and required the government of Cuba to give up all slaves imported since that date. Also, that 6000 troops were to embark immediately at Cadiz for Cuba, and that the fortifications of the island were to be put in a state of efficiency. It was reported, also, that the Canary Islands had declared themselves independent of Spain.

The "Extra Session" adjourned on Monday. The Senate was occupied the whole day in the consideration of executive appointments. In addition to the members of the new cabinet, given above, the following important appointments have been confirmed: Edward Everett, to be minister to Great Britain.

Wm. Hunter, (now charge d'affaires,) to be minister to Rio de Janeiro.

Wm. Boulyware, of Virginia, charge d'affaires to Naples.

James D. Doty, Governor of Wisconsin.

Bela Badger and Mr. Ritner have been rejected by the Senate. The appointment of Isaac Roach, as treasurer of the mint at Philadelphia, has been confirmed, vice Joseph Ritner, rejected.

*Friday, September 24, 1841.*

News of the arrival from England of two steamships, the Great Western and the Caledonia, has been received since our last week's publication.

The new parliament had met, and the Whig ministry had been defeated, by a majority of 91, and had consequently resigned. The forming of the new Tory ministry was confided by the queen to Sir Robert Peel, who will of course be its head.

A debate had taken place in the house of Commons, on the case of McLeod, in which it appeared that the British government were content to let things take their course, being assured of the ultimate discharge of McLeod. The previous rumors of war impending, on this score, had no foundation.

The prospect of the harvest in England was much more favorable, and of course that of continued high prices for wheat here less so.

The cotton market has been getting worse. Great losses are expected to fall upon the buyers, and shippers from the United States. There is great distress among the manufacturing population of Great Britain.

The war of Russia against the Circassians is pushed with vigor, but with very little success to the arms of the former power.

"The Stuttgart Gazette states, under date of Vienna, that the finances of Austria were in a most embarrassed situation, and that all commercial enterprise was completely paralyzed." [Austria is a paper money country.]

A German commercial firm, Eschenwein and Co. which had houses in New York, Philadelphia and Liverpool, lately failed for \$900,000 and the principal had absconded and gone to Europe before the explosion took place. We are sorry to learn that many tobacco dealers in Virginia will lose by this bankruptcy, and particularly the tobacco manufacturers of the

smaller towns, who had trusted principally to this concern.

The executive of Virginia are in a difficulty, or have created one, about the Wheeling Bank notes (which had depreciated as much as 15 per cent. or more,) for taxes, and have the matter now under deliberation. The executive have no power in the case. The law has declared all the notes of the banks of Virginia receivable for taxes to the state—and so it must remain until that law be repealed, even if the depreciation of Wheeling notes were 50 per cent., and the sheriffs were to pay in the whole revenue (or its nominal amount) in those notes. We trust that the present lesson and loss to the state will be severe enough to compel the repeal of this general securityship by the people for all bank notes of Virginia, even if it should be of broken and totally discredited banks.

"The public are cautioned by the Buffalo papers against issues from the Butler County Bank and Hamilton County Bank. They are represented as not worth a cent."

A New-Orleans paper says—"Intelligence has been received here that an individual calling himself John P. Caldwell has forged a letter of credit for \$25,000 from the house of Maunsel White & Co. of this city, upon the banking house of Brown, Brothers & Co. in New York, which latter firm is a branch of the English firm of that name in Liverpool." He obtained the money.

"The New York American states that Caldwell, the man who committed the successful forgery upon Brown, Brothers & Co., of that city, also operated upon another house in the same way, and for the same amount. The agent in New York of the Liverpool house of Fletcher, Alexander & Co. was induced by a letter of credit similar in all respects to the one received by Brown, Brothers & Co. to advance to the same man Caldwell precisely the same amount, \$26,000, upon the same number of bales of cotton. The rogue has succeeded in getting already about \$52,000, and perhaps may have repeated the operation in other quarters. Both letters of credit were received by the same mail." [One of these amounts of \$25,000, the financier chose to receive in southern paper, and had regular and correct checks on the Richmond banks which he drew in person.]

The Havre packet which sailed Sept. 16 from New York took out \$240,000 in specie. So writes the New York correspondent of the National Intelligencer. And the New York American, another ultra bankite, reports that the whole amount of specie exported from New York to Europe during the first two weeks of the present month of September, was \$718,443—of which \$267,786 went to Havre, and \$456,704 to London.

The following extract is from a letter from a gentleman in Baltimore who is well informed as to banking operations. It was written September 18, 1841. "There is probably no point in the United States, where there is such regular and systematic effort to depreciate its currency as in Virginia, considering the extent of the trade."

It has been ascertained, by a steam expedition sent by the British government, that the Euphrates is navigable more than 1000 miles; and by using that river for steamers and the Orontes, emptying into the Mediterranean, and only 45 leagues of easy land carriage between, that this new route to India will be greatly the most to be preferred. This information must have important effects on the interest and commerce of England, and the world.

The news from Canton (to April 20,) adds nothing material. Negotiations were still proceeding very slowly. No more warlike operations since the previous accounts.

It is rumored that the interest due on the bonds of the state of Maryland will not be paid on the first day of October. The treasurer of the state has not succeeded in borrowing the money required.—*Balt. Republican*.

A forgery of \$20,000 has been discovered on the Merchants' Bank in Baltimore.—*Id.*

The magazine near Lockport, New York, was broken open at night, and 65 kegs of gunpowder taken off by the burglars. This is another "premonitory symptom" of a "patriotic" or piratical movement on the Canada border.

*By this morning's mails, (Sept. 24.)*

As we feared, the effects of the late freshet in the Savannah river, have been very disastrous to the prospects of the river planters, and every day only but develops additional losses. As yet we have heard from a few farms near the city; on some of which nearly the whole cotton and corn crops have been covered in water, and are consequently destroyed, besides, the loss of considerable stock that could not be got out in time to save them from destruction.—*Aug. Chron.*

The "Money Article" of the New York Herald, September 22, has the following passage:—"The money market here is now beginning to feel the effects of the suspension at the South, the operation of

which upon bills we endeavored to exhibit yesterday. The failure of the cotton houses abroad, the precarious situation of the houses here, and the consequent discredit attaching to bills, have produced a similar effect upon sterling bills to that created in francs by the stoppage of S. V. S. Wilder, and specie has become very much in requisition for shipment; so much so, that many of the banks are selling their silver. Nearly \$150,000 has changed hands this morning at  $\frac{1}{4}$  per cent. premium for shipment—one half the amount was disposed of by one bank."—"There will no doubt, be a good deal of specie go by the Great Western on Saturday. This is the result of southern suspension. If the banks of that section had paid specie, the surplus in this market would long since have spread itself over the south, and furnished the people with a currency."

*More indications of border warfare.*—Two British steamers, provided with cannon (contrary to the spirit of the treaty between Great Britain and the United States,) are moored between Navy Island and the Canadian shore. A cannon was fired at one of the vessels in the night, but did no damage. Another attempt was made on the night of the 9th, to blow up by gunpowder a lock of the Welland canal. The explosion had but slight effect.

Lord Sydenham, governor of Canada, died on Sept. 19, at Kingston, of lock-jaw produced by injuries suffered from a fall from his horse.

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# THE FARMERS' REGISTER.

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VOL. IX.

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No. 10.

EDMUND RUFFIN, EDITOR AND PROPRIETOR.

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## PUBLICATION OF THE BYRD MANUSCRIPTS.

We have so often complained, and to so little purpose, of the dearth of communications to the *Farmers' Register*, that it is perhaps useless to renew or even to advert to such complaints. If it were of use, we could again fill pages with the most cogent and obvious reasons why, for their own interest, (independent of more general and important considerations,) our many old correspondents, who have ceased to confer such favors, should again contribute articles for publication to our work; and that the far greater number of well qualified persons who have never commenced to render such services, should forthwith begin and continue to furnish agricultural information. But, we fear, it is useless to say again what has been already said in vain so often before. And, in the mean time as there is neither much original matter furnished, and as our brother editors of agricultural journals seem to be as poorly supplied, so that it is almost as difficult to find good articles for selection and republication, we shall attempt to supply the deficiency with other original and good and interesting matter, and such as will accord with our original plan, and will not be out of place in the *Farmers' Register*; but which will certainly be less appropriate than would be useful articles on practical agriculture, which will always be the most desirable and valued, and which, when offered, will have precedence of all others.

With this view, we shall commence in this number the publication of the Byrd manuscripts, and first the "History of the Dividing Line betwixt Virginia and North Carolina, run in the year 1728." There has been no publication previously made of these curious and interesting writings, and neither is there in existence any copy of the time-worn original manuscripts, which were placed at our disposition by the owner, the late George E. Harrison of Brandon. In publishing and presenting this work to our readers, we trust that we shall render a service as acceptable to them as we know it will be valuable to the literary public. It will be best both for the appearance of the work and the convenience of readers, that the separate sheets of this work shall be placed together, and be so bound at the end of the volume of the *Farmers' Register*; and with that view, the pages will be numbered separately.

VOL. IX.—56

## HAY SEED UPON INVERTED SOD.

From the New England Farmer.

Many of our moist lands upon our dry uplands and the bog meadows, though natural to grass, occasionally need renovating. As long as a common top-dressing will call a good crop, nothing more should be done than to apply the manure on the surface. But when the better grasses have run out, and when moss begins to collect upon the surface, it is necessary to plough such land. But where the plough will do its work tolerably well, it is not necessary to plant. Those lands which are wet and heavy in the early part of the season, and which bake in the scorching months of July and August, are not profitable for tillage. They may yield a crop of potatoes, and possibly of corn, but the chances for this are small, and it is usually bad working these wet spots in the early part of the season. The best way to treat them is, to turn the land over as soon as it can conveniently be done after the crop of hay has been removed; to plough in such direction that the dead furrows shall come in suitable places for surface drains, to roll well; and then put on a dressing of compost. When this has been done, sow hay seed, and harrow thoroughly. Then use the roller again, and the next season you may obtain a fair crop of hay, and the following year you probably will get a heavy burthen. Herds-grass is better for these moist grounds than clover or red top. No one who has been accustomed to this process will ever think of tilling any wet lands that can be laid over smooth by the plough.

The process here recommended has been repeatedly urged upon our farmers, by Mr. Buckminster, editor of the *Boston Cultivator*; and as far as he has influenced them to comply with his advice in this matter, he has rendered them good service.

This is the proper season of the year for working all low lands, and it is by attention to them, that our farmers generally must hope to thrive. They repay the labor and expense bestowed upon them better than most of the high grounds.

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## DRIVING NAILS INTO HARD WOOD.

From the New Genesee Farmer.

We have lately seen another experiment of driving nails into hard seasoned timber, fairly tried. The first two nails, after passing through a pine board, entered about an inch, and then doubled down under the hammer; but on dipping the points of the other six or eight nails into lard, every one was driven home without the least difficulty.

Carpenters, who are engaged in repairing old buildings, sometimes carry a small lump of lard or tallow for this purpose on one of their boots or shoes.

## OF SEED-SOWING AND SEED SAVING.

From Lindley's Horticulture.

When a seed is committed to the earth, it undergoes certain chemical changes before it can develop new parts and grow. These changes are brought about by heat and water, assisted by the absence of light. In many seeds the vital principle is so strong, that to scatter them upon the soil, and to cover them slightly with earth, are sufficient to insure their speedy germination; but in others the power of growth will only manifest itself under very favorable conditions; it is, therefore, necessary to consider well upon what the circumstances most suitable to germination depend.

Moisture is necessary, but not an unlimited quantity. If a seed is thrown into water and exposed to a proper temperature, the act of germination will take place; but, unless the plant is an aquatic, it will speedily perish; no doubt because its powers of respiration are impeded, and it is unable to decompose the water it absorbs, which collects in its cavities and becomes putrid. There must, therefore, be some amount of water, which to the dormant as well as the vegetating plant is naturally more suitable than any other; and experience shows that quantity to be just so much as the particles of earth can retain around and among them by the mere force of attraction. To this is to be ascribed the advantages derived from those mixtures of peat, loam, and sand, which gardeners prefer for their seedlings; the peat and sand together keep asunder the particles of loam which would otherwise adhere and prevent the percolation of water; the loam retains moisture with force enough to prevent its passing off too quickly though the wide interstices of sand and peat. If during the delicate action of germination, the changes that the seed undergoes take place without interruption, the young plant makes its appearance in a healthy state; but, if by irregular variations of heat, light, and moisture, the progress of germination is sometimes accelerated and sometimes stopped, the fragile machinery upon which vitality depends may become so much deranged as to be no longer able to perform its actions, and the seed will die. It is for the purpose of securing uniformity in these respects, that we employ, in delicate cases, the steady heat of a gentle hot-bed, shaded; and, in all cases whatever, the assistance of a coating of earth scattered over the seed.

Under what depth of earth seed should be buried must always be judged of by the experience of a gardener: but it should be obvious that minute seeds, whose powers of growth must be feeble in proportion to their size, will bear only a very slight covering; while others, of a larger size and more vigor, will be capable, when their vital powers are once put in action, of upheaving considerable weights of soil. As, however, the extent of this power is usually uncertain, the judicious gardener will take care to employ, for a covering, no more earth than is really necessary to preserve around his seeds the requisite degree of darkness and moisture.\* Hence the common

practices of sowing small seeds upon the surface of the soil, and covering them with a coating of moss, which may be removed when the young seedlings are found to have established themselves. In other cases, very minute seeds are mixed with sand before they are sown.

The latter practice is not, however, merely for the sake of covering the seed with the smallest possible quantity of soil, but has for its object the separation of seeds to such a distance, that when they germinate they may not choke up each other. If seedlings, like other plants, are placed so near together that they either exhaust the soil of its organizable matter, or overshadow each other so as to hinder the requisite quantity of light, some will die in order that the remainder may live; and this, in the case of rare seeds, should, of course, be guarded against very carefully.

With regard to the temperature to which a seed should be subjected, in order to secure its germination, this, undoubtedly, varies with different species, and depends upon their peculiar habits, and the temperature of the climate of which they are native. So far as general rules can be given upon such a subject, it may be stated that the temperature of the earth most favorable for germination is 50° to 55° for the seeds of cold countries, 60° to 65° for those of "green-house plants," and 70° to 80° for those of the torrid zone. No seed, however, has been known to refuse to germinate in the last-mentioned temperature, although those to which such a heat is necessary will not, in general, grow in a healthy manner in a lower temperature. We have no exact experiments upon this subject, except in a few cases recorded by Messrs. Edwards and Colin, by whom there is a very valuable set of observations upon the temperatures borne by certain agricultural seeds. (*Annales des Sciences*, new series, vol. v. p. 5), the result of which may be thus stated:—

At 44.6°, wheat, barley, and rye could germinate.

95° in water, for three days,  $\frac{1}{2}$  of the wheat and rye, and all the barley, were killed.

104°, in sand and earth, the same seeds sustained the temperature for a considerable time, without inconvenience.

113°, under the same circumstances, most of them perished.

122°, under the same circumstances all perished.

But it was found that, for short periods of time, a much higher temperature could be borne.

At 143.6°, in vapor, wheat, barley, kidney-beans, and flax retained their vitality for a quarter of an hour; but in 27½ minutes, the three last died at a temperature of 125.6°.

167°, in vapor, they all perished.

167°, in dry air, they sustained no injury.

It will be presently seen that some seeds will bear a much higher temperature.

The foregoing observations apply to seeds in a perfect state of health; when they have become sickly or feeble, from age or other causes, some

young plants, when produced, may have "sufficient hold of the ground." The fact is, that a seed, when it begins to grow, plunges its roots downwards and throws its stem upwards from a common point, which is the seed itself; and, consequently, all the space that intervenes between the surface of the soil and the seed is occupied by the base of the stem, and not by roots.

\* It may perhaps, be as well to notice, in this place, an erroneous opinion, not uncommonly entertained, that seeds must be "well" buried in order that the

precautions become necessary, to which, under other circumstances, no attention requires to be paid.

When the vital energies of a seed are diminished, it does not lose its power of absorbing water, but it is less capable of decomposing it. The consequence of this is, that the free water introduced into the system collects in the cavities of the seed, and produces putrefaction; the sign of which is the rotting of seeds in the ground. The remedy for this is to present water to the seed in such small quantities at a time, and so gradually, that no more is absorbed than the languid powers of the seed can assimilate; and to increase the quantity only as the dormant powers of vegetation are aroused. One of the best means of doing this is, to sow seeds in warm soil tolerably dry; to trust for some time to the moisture that exists in such earth, and in the atmosphere for the supply required for germination; and only to administer water when the signs of germination have become visible; even then the supply should be extremely small. If this is attended to, carbonic acid is very slowly formed and liberated, the chemical quality of the contents of the seed is thus insensibly altered, each act of respiration may be said to invigorate it, and by degrees it will be brought to a condition favorable to the assimilation of food in larger quantities. Mr. Knight used to say that these effects were produced in no way so well as by enclosing seeds between two pieces of loamy turf, cut smooth and applied to each other by the underground sides; such a method is, however, scarcely applicable to any except seeds of considerable size.\*

Other expedients have occasionally been had recourse to successfully. Where seeds are enclosed in a very hard dry shell, it is usually necessary to file it thin, so as to permit the embryo to burst through its integuments when it has begun to swell. Under natural circumstances, indeed, no such operation is practised: but it is to be remembered that such seeds will have fallen to the ground as soon as ripe, and before their shell acquired the bony hardness that we find after having become dry.

Sometimes it has been found useful to immerse seeds in tepid water until signs of germination manifest themselves, and then to transfer them to earth: but this process cannot be applied with advantage to seeds in an unhealthy state; and it is only of use to healthy seeds, by accelerating the time of growth, a practice which may, in outdoor crops, be sometimes desirable, when applied to seeds which, like the beet, the carrot, or the parsnip, will in dry seasons, lie so long in the ground without germinating, that they become a prey to birds or other animals.

Of late years, the singular practice has been introduced of *boiling seeds*, to promote germination. This was, I believe, first recommended by Mr. Bowie, who stated, in the *Gardener's Magazine*, vol. viii. p. 5, (1832.) that "he found the seeds of nearly all leguminous plants germinate more readily by having water heated to 200°, or

even to the boiling point of Fahrenheit's scale, poured over them, leaving them to steep and the water to cool for twenty-four hours." Subsequently, the practice has been adopted by other persons with perfect success; and, some years ago, seedlings of *Acacia lophantha* were exhibited before the Horticultural Society by the late Mr. Thomas Cary Palmer, which had sprung from seeds boiled for as much as five minutes. I am also acquainted with other cases, one of the more remarkable of which was the germination of the seeds of the raspberry, picked from a jar of jam, and which must therefore have been exposed to the temperature of 230°, the boiling point of syrup. It is difficult to understand in what way so violent an action can be beneficial to anything possessing vitality; the fact, however, is certain. As such instances of success are confined to seeds with hard shells, it is possible that the heated fluid may act in part mechanically by cracking the shell, in part as a solvent of the matters enclosed in the seed, and in part as a stimulant.

Mr. Lymburn, nurseryman at Kilmarnock, has lately called attention to the effect produced upon germinating seeds by alkaline substances. He states that experiments made by Mr. Charles Maltuen, and narrated in Brewster's *Journal of Science*, having shown that the negative or alkaline pole of a galvanic battery caused seeds to germinate in much less time than the positive or acid pole, he was induced to observe the effects on seeds of acetic, nitric, and sulphuric acids, and also of water rendered alkaline by potash and ammonia. "In the alkaline, the seeds vegetated in thirty hours, and were well developed in forty; while in the acetic and sulphuric they took seven days; and, even after a month, they had not begun to grow in the acetic." This experiment led to others upon lime; "a very easily procured alkali, and which he inferred to be more efficient than any other from the well-known affinity of quick or newly slacked lime for carbonic acid. Lime, as taken from the quarry, consists of carbonate of lime, or lime united to carbonic acid; but in the act of burning, the carbonic acid is driven off; and hence the great affinity of newly slacked lime for carbonic acid.

He depended, therefore, upon this affinity, to extract the carbon from the starch, assisted by moisture," (*Gard. Mag.*, xiv. 74); and it is stated that the results were exceedingly striking. Old spruce fir seed, which would scarcely germinate at two years old, produced a fine healthy crop when three years old, having been first damped and then mixed with newly slacked lime; and under the same treatment, an average crop of healthy plants was obtained when the seed was four years old. Unfortunately, the manner in which the original experiments upon acids and alkalies were conducted is not explained, (it is to be presumed that the water employed was only acidulated with the acids spoken of,) and I am not aware of the experiments having been repeated. The last method of promoting germination, to which it is necessary to advert, is the mixing seeds with agents that have the power of liberating oxygen. It has been shown that a seed cannot germinate until the carbon with which it is loaded is to a considerable extent removed; the removal of this principle is effected by converting

\* [The sowing of very small and delicate seeds in the open air should be deferred until the season is so far advanced, that all probable danger from cold weather is past. In case of drought they may be shaded during sunshine, and watered with a fine-nosed watering-pot in the evening. A. J. D.]



it into carbonic acid, for which purpose a large supply of oxygen is required. Under ordinary circumstances, the oxygen is furnished by the decomposition of water by the vital forces of the seed; but when those forces are languid, it has been proposed to supply oxygen by some other means. Humboldt employed a dilute solution of chlorine, which has a powerful tendency to decompose water and set oxygen at liberty, and, it is said, with great success. Oxalic acid has also been used for the same purpose.

Mr. Otto, of Berlin, states that he employs oxalic acid to make old seeds germinate. The seeds are put into a bottle filled with oxalic acid, and remain there till the germination is observable, which generally takes place in from twenty-four to forty-eight hours; when the seeds are taken out, and sown in the usual manner. Another way is to wet a woollen cloth with oxalic acid, on which the seeds are put, and it is then folded up and kept in a stove; by this method small and hard seeds will germinate equally as well as in the bottle. Also very small seeds are sown in pots and placed in a hot-bed; and oxalic acid, much diluted, is applied twice or thrice a day till they begin to grow. Particular care must be taken to remove the seeds out of the acid as soon as the least vegetation is observable. Mr. Otto found that by this means seeds which were from twenty to forty years old grew, while the same sort, sown in the usual manner, did not grow at all (*Gard. Mag.*, viii. 196): and it is asserted by Dr. Hamilton (*ib.*, x. 368, 453,) and others, that they have found decided advantages from the employment of this substance. Theoretically it would seem that the effects described ought to be produced, but general experience does not confirm them; and it may be conceived that the rapid abstraction of carbon, by the presence of an unnaturally large quantity of oxygen, may produce effects as injurious to the health of the seed as its too slow destruction in consequence of the languor of the vital principle.

The length of time that some seeds will lie in the ground, under circumstances favorable to germination, without growing, is very remarkable, and inexplicable upon any known principle. If the hawthorn be sown immediately after the seeds are ripe, a part will appear as plants the next spring; a larger number the second year; and stragglers, sometimes in considerable numbers, even in the third and fourth seasons. Seeds of the genera *ribes*, *berberis*, and *pæonia*, have a similar habit. Mr. Savi is related by De Candolle to have had, for more than ten years, a crop of tobacco from one original sowing; the young plants having been destroyed yearly, without being allowed to form their seed. This matter does not, perhaps, concern the theory of horticulture, for theory is incapable of explaining it; but it is a fact that it is useful to know, because it may prevent still living seeds from being thrown away under the idea that, as they did not grow the first year they will never grow at all.

The maturation of the seed, being a vital action indispensable to the perpetuation of a species, is, in wild plants, guarded from interruption by so many wise precautions, that no artificial assistance is required in the process; but in gardens, where plants are often enfeebled by domestication, or exposed to conditions very different from those to

which they are subject in their natural state, the seed often refuses to ripen, or even to commence the formation of an embryo. In such cases, the skill of gardeners must aid the working of nature, and art must effect that which the failing powers of a plant are unable to bring about of themselves.

Sterility is a common malady of cultivated plants; the finer varieties of fruit, and all double and highly cultivated flowers, being more frequently barren than fertile. This arises from several different causes.

The most common cause of sterility is an unnatural development of some organ in the vicinity of the seed, which attracts to itself the organizable matter that would otherwise be applicable to the support of the seed. Of this the pear, the pine-apple, and the plantain are illustrative instances. The more delicate varieties of pear, such as the Gansel's bergamot and the chaumontelle, have rarely any seeds; of pine-apple, none, except the Enville now and then, have seeds, and that variety, though a large one, is of little value for its delicacy, and probably approaches nearly to the wild state of the plant; of plantains, few, except the wild and crabbed sorts, are seedful. The remedy for this appears to be, the withholding from such plants all the sources from which their succulence can be encouraged. If, in consequence of any predisposition to form succulent tissue (on which the excellence of fruit much depends,) the organizable matter of the plant be once diverted from feeding the seed to those parts in which the succulence exists, it will continue, by the action of endosmose, to be attracted thither more powerfully than to any other part, and the effect of this will be the starvation of the seed: but a scanty supply of food, an unhealthy condition of the plant itself, or withholding the usual quantity of water, will all check the tendency to luxuriance, and therefore will favor the development of the seed, whose feeble attracting force is, in that case, not so likely to be overcome by the accumulation of attracting power in the neighboring parts. Thus we see that pine-apples are more frequently seedful under the bad cultivation of the continent, than in the highly kept and skilfully managed pineries of England. Abstraction of branches, in the neighborhood of fruit, has also been occasionally found favorable to the formation of seed; evidently because the food that would have been conveyed into the branches, having no outlet, is forced into the fruit.

Another cause of sterility is the deficiency of pollen in the anthers of a given plant, as in vegetable mules which usually partake of the spermatic debility so well known in similar cases in the animal kingdom. It has often been found that sterility of this kind is cured by the application, to the seedless plant, of the vigorous pollen of another less debilitated variety.

In some plants, such as pelargoniums, when cultivated, the anthers shed their pollen before the stigma is ready to receive its influence, and thus sterility results. All such cases are provided for, by employing the pollen of another flower. (See Sweet, in the *Gardener's Magazine*, vii. 206.)

An unfavorable state of the atmosphere obstructs the action of pollen, and thus produces

sterility. Pollen will not produce its impregnating tubes in too low a temperature, or when the air is charged with moisture; neither, in the absence of wind or insects, have some plants the power of conveying the pollen to the stigma, their anthers having no special irritability, and only opening for the discharge of the pollen, not ejecting it with force. If we watch the hazel, or any of the coniferous order, in which the enormous quantity of pollen employed to secure the impregnation of the seed renders it easy to see what happens, it will be found that no pollen is scattered in damp cold weather; but, in a sunny, warm, dry morning, the atmosphere surrounding such plants is, in the impregnating season, filled with grains of pollen discharged by the anthers. In wet springs the crops of fruit fail, because the anthers are not sufficiently dried to shrivel and discharge their contents, which remain locked up in the anther cells till the power of impregnation is lost. In vineries and forcing-houses generally, into which no air is admitted to disturb the foliage, nor any artificial means employed for the same end, and when the season is too early for the presence of bees, flies, and other insects, the grapes will not set: and in the frames of melons and cucumbers, from which insects are excluded, no seed is formed unless the pollen is conveyed by hand, from those flowers in which it is formed, to others in which the young fruit alone is generated. In all cases of this kind, the remedy for sterility is obvious enough where plants exist in an artificial condition; but, when they occur in the orchard or the flower-garden, in the open air, science suggests no assistance.

It sometimes happens that particular parts of plants, distant from the fruit, are so constructed as to attract to themselves the food intended for the fruit, and thus to prevent the formation of seed. For example:—The early varieties of potato do not readily produce seed, owing to the abstraction by their tubers of the nutritive matter required for the support of the seed. Mr. Knight found that by destroying the tubers in part, as they formed, seeds were readily procured from such varieties.\*

But perhaps the most frequent cause of sterility is the monstrous condition of the flowers of many cultivated plants. It has been fully explained that the floral organs of plants are nothing more than leaves, so modified as to be capable of performing special acts, for particular purposes; but they are not capable of performing those acts any longer than they retain their modified condition: and therefore the stamens cannot secrete pollen, when, by accidental circumstances, they are changed into leaves, as happens in double flowers; then, there is nothing to fertilize the stigma, and, of course, no seed is produced. Or the carpels themselves may be converted into leaves, and have lost their seed-bearing property. Double flowers in the latter case cannot possibly bear

seed; but in the condition first mentioned they may, and often do. To bring this about, the cultivator plants in the vicinity of his sterile flowers others of the same species in which a part at least of the stamens are perfect, and they furnish a sufficiency of pollen for the impregnation of the other flowers in which there are no stamens.

In some cases, principally in those of composite flowers, the seed is formed and advanced towards perfection, and then decays; this is owing to the flower heads of such plants being composed, in a great measure, of soft scales, absorbent and retentive of moisture, to which, in their own country, they are not exposed in the fruiting season, but by which they are affected under the hands of the cultivator. When the heads of such flowers are soaked with moisture, which they cannot get rid of, the scales rot, and decay spreads to all the other parts, and thus the production of seed is prevented. The Chinese chrysanthemum is a familiar instance of this. Such plants seed readily if the flower heads are kept warm and dry; and it is thus that the sterile chrysanthemum has been made seedful; that is to say, by growing it in a dry warm winter border, protected from showers by a roof of glass, or by using some such means of guarding it; or by rearing it in a warm dry climate.

When seeds are freely produced, it is not altogether a subject of indifference in what way they are saved, if it is desired that their progeny should be the most perfect that can be obtained. Weak seeds produce weak plants, and therefore recourse should be had, in all delicate cases, to artificial means for giving vigor to the seed. In general, the cultivator trusts to his eyes for separating the plumpest and most completely formed seeds; or to floating them in water, selecting only the heavy grains that sink, and rejecting all those which are buoyant enough to float.

But the energy of the vital principle in a seed may be, undoubtedly, increased by abstracting neighboring fruits, by improving the general health of the parent plant, by a full exposure of it to light, and by prolonging the period of maturation as much as is consistent with the health of the fruit. It is a constant rule that seedlings take after their parents, an unhealthy mother producing a diseased offspring and a vigorous parent yielding a healthy progeny, in all their minute gradations and modifications; and this is so true, that, as florists very well know, semi-double ranunculi, anemones, and similar flowers, will rarely yield double varieties, while the seed of the latter as unfrequently give birth to semi-double degenerations. Independently of these things, it is indispensable that the seed of a plant, when saved, should be perfectly ripe, if it is intended to be laid by for future sowing. The effect of ripening is to load the seed with carbon in the form of starch, or some such substance and to deprive it of water, conditions necessary for its preservation; but, if a seed is gathered before being ripe, these conditions are not secured; and, in proportion to the deficiency of carbon and superabundance of water is the seed liable to perish.

The complete maturation of the seed is, however, a disadvantage, when it has to be sown immediately after being gathered; for the embryo is formed, and capable of germinating, long before

\* [Vice versa, the produce of the potatoes may be much increased by plucking off the blossoms, in which case the nutritive matter which would have been expended upon them and the berries, or fruit, serves to increase the size of the tubers, for which alone the plant is cultivated. This fact, so perfectly consistent with theory, has been completely confirmed by experiment. See Liebig's *Organic Chemistry*, p. 125. A. G.]

the period of greatest maturity. There are two periods in the latter part of the organization of a seed which, although separated by no limits, require to be distinguished. The first is that when the embryo is completed; and the second is when nature has, in addition, furnished it with the means of maintaining its vitality for a long period. It is just as capable of growing at the expiration of the first period as of the second; it will do so immediately if committed to the ground, and we see it actually happening to peas, beans, corn, and other field crops, in wet summers; but, at the end of the second period, it cannot germinate till it has relieved itself of all the carbon which, during that period, was deposited in its tissue.

If seeds are to be preserved for a length of time, a state of complete dryness is so necessary to them that it has been recommended to increase it by artificial means; not, however, by the application of heat, or by any process like that of kiln-drying, for that would destroy their vitality; but by some of those chemical processes which dry the atmosphere without raising its temperature. It occurred to Mr. Livingstone, that air made dry by means of sulphuric acid might be advantageously employed for this purpose, and he says that the success of his experiments was complete. He placed the seeds to be dried in the pans of Leslie's ice machine, and carefully replaced the receiver without exhausting the air; small seeds were sufficiently dried in one or two days, and the largest seeds in less than a week. (*Hort. Trans.*, iii. 184.)

Other contrivances might easily be adopted. Muriate of lime, for instance which has the property of absorbing the moisture of the atmosphere, might, perhaps, be employed with advantage in drying the air in which seeds are placed after being gathered.

The reason why it is so important that seeds which have to be long kept should be thoroughly dried, is, partly because seeds have the power of decomposing water, which causes the commencement of germination, and, if this happens while they are cut off from the other means of existence, the process of growth must be stopped, and their death will follow; and, in part, from the tendency of vegetable matter in contact with water to putrefy, if the actions of life are not in play.

#### THE PEAR TREE.

From the New Genesee Farmer.

We are told that many persons are afraid to plant pear trees, lest they should die with the *fire blight*; that they have done their best to save the trees, but all to no purpose; and that they now settle down in despair. In reply to this melancholy account, however, we can repeat the assurance that *we have not lost a single tree by the fire blight in twenty years*. It has been in our fruit garden several times, but always seemed to walk out again as fast as we did; for we cut off the injured branches *without delay*, and burnt them *immediately*, destroying, as we believed, the whole colony of insects that had committed the depredation.

As soon as the leaves begin to blacken on the branches, for two feet or more near their extremities, let the owner waken up at once, lay aside all other business, and proceed with as much zeal to the task as he would drive the pigs from his garden. We are satisfied it is the putting off till a more convenient season in such cases, that proves so fatal to the pear tree. The stable door may be locked when the horse is stolen; and the limb may be cut off when the insects are gone to another part of the tree. Did you cut off the limb *below* where it was dead, say a foot or more? "No, we only cut off the dead part"—leaving the insect at work below. Did you burn it when it was cut off? "Why, no, we left it under the tree"—for the insect (if there) to go up again at his leisure.

#### THE CURCULIO.

From the New Genesee Farmer.

Every person who owns a plum tree, ought to feel an interest in the history of the curculio, for it has been the chief obstacle to raising plums, apricots and nectarines, *where there were trees*. We believe it is not known in Europe, though other species of the same genus there have their peculiar mode of annoyance.

Of the benefit of our circular tin troughs, we can say nothing decisive, because they were not applied till after the curculio had ascended the trees, and we jarred the trees that had those appendages, as well as the others. To the slaughter that we made of this insect in the early part of summer, we ascribe much of the abundance that our trees have yielded; and in confirmation of this opinion, we may mention that a tree in the fruit garden which had been forgotten, bore three apricots, while another young tree, of rather less size, bore half a bushel; and we know of no other reason for the difference.

Before this summer we had believed that the young curculio continued in the fruit till it fell, and only escaped from its habitation after it had lain for some time on the ground. Late observations, however, have shown that impression to be incorrect. We found both plums and apricots *on the trees*, from which the insect had taken its departure through a small orifice cut in the side of the fruit.

We have had some curiosity to ascertain the *whereabout* of the old curculio, after it had ceased to deposit its nits in the fruit, (which is said by Judge Darling of New Haven to be early in the seventh month.) We therefore spread a sheet under several plum trees, about the middle of the eighth month; and, on jarring them violently, caught several, though in far less number than when we last examined the trees about two months before. Indeed, under some trees where we most expected them, we found none. This failure, however, may have been chiefly owing to the hot weather, so favorable to the activity of all insects, and which doubtless enabled them the better to hold on. We hope to repeat the experiment in cooler weather.

For the Farmers' Register.

## PAPER NETS FOR CLEANING AND VENTILATING SILK-WORMS.

Believing this admirable labor-saving and ventilating apparatus to be the most valuable invention for that purpose that has been made since this noble insect was first domesticated, I should deem myself guilty of unpardonable neglect, if I did not urge its adoption on American silk-culturists. Before I describe these nets, the method of making and the manner of using them, I will make a short quotation from the 'Journal of the American Silk Society.' This will show the opinion entertained of their value in a country where the rearing of silk-worms is pursued as a profitable branch of husbandry, and where the management of silk worms is well understood. Persons unacquainted with the habits of silk-worms, are generally incompetent judges of the value of fixtures used for their accommodation. Hence thousands of dollars have been thrown away by inexperienced theorists, in the United States, for the purchase of fixtures that have ultimately been thrown away. By the way, I must state explicitly, that I have neither paper, laths or nails, for sale.

"It appears, from the pages of the 'Propagateur,' that the operation of cleaning the worms is now performed in all the principal French cocoeneries by means of what are termed paper-nets (*papers filets*.) It appears that nets made of twine were first used, but they are now universally superseded by these paper nets, which are much cheaper and are said to be better adapted to the purpose. I regret that I have not been able to find any description of these nets in the 'Propagateur'—all the communications take it for granted that the reader is already acquainted with their construction. As far as I can learn, however, from the different articles on the subject, I think they are made by punching a great number of small holes in a sheet of strong paper with an instrument constructed for the purpose. The inventor of this apparatus is M. Eugene Robert. In a letter to the editor of the 'Propagateur,' he remarks: 'The use of the paper nets in the cocoenery of Saint Tulle, and in a great number of large and small establishments in the neighborhood, has been attended with such entire success, that I will hereafter confine myself to a simple presentation of the testimony of those culturists who have made use of them, in order to recommend the adoption of my economical net.'"

I have now 250 paper nets in use; and after the third moulting they may be laid over the worms daily, if the culturist desires it, up to the time of moulting, and the worms may be kept as clean as the most careful could desire and with little labor. The nets must not be laid over the worms when they are torpid. But after the third and fourth moulting, when nearly all the worms are roused, they may be laid over them daily, and when the leaves are scattered over the paper, they will speedily extricate themselves from the litter, ascend through the holes, and commence eating. The nets may be used with or without shelves under them. If without shelves, they can be supported by parallel slips of timber, about twenty inches apart; if placed on shelves, they must be raised about two inches, by placing blocks of timber under each end.

These nets are made by providing a framework of light laths, three feet long and two wide (this size is most convenient); the two pieces of laths, three feet long, being united by three pieces, two feet long, one at each end and one in the middle. Holes, five-eighths of an inch in diameter, are punched in sheets of strong brown paper, three feet long and two feet wide, and these are pasted on the frames. The distance between the holes may be about an inch. With an instrument, called a *wad-cutter*, twenty sheets of paper may be punched at once. Double sets of these nets will cost but little more than shelves of rough plank; and if the frames are well put together with wrought nails, they will last more than 20 years. The paper would require renewing in every period of six or seven years.

From passages in the letter of Dr. J. S. Bell, in the 'Journal of the American Silk Society,' it appears that the use of these nets is rapidly extending in France; and as silk culture advances in the United States, I have no doubt they will be generally adopted. They accommodate themselves to the means of every farmer, who can buy a few dollars' worth of paper and nails, and who is capable of using the saw and hammer.

If this paper should be read by any who are almost persuaded to dig up their mulberry trees, I entreat them to spare them one or two years longer, and make trial of these nets, by rearing the worms from one or two ounces of eggs.

LAXTON Y. ATKINS.

P. S. My rearings of silk-worms during the past summer, have not been as successful as I expected when I wrote about the muscardine. I have now a large parcel, nearly ready to spin, that look very well. Such facts, drawn from the experience of the season, as may be deemed useful, I will communicate hereafter.

September 10th, 1841.

## WHEAT AND INDIAN CORN IN FRANCE.

For the Farmers' Register.

Mr. Editor:—I place at your disposal some more translations from "*Le Bon Jardinier*;" relating to wheat and Indian corn in France.

*Froment.*—Wheat. Not being able to give here a work sufficiently extended on the different kinds of wheat, I shall content myself with merely mentioning some of the most valuable, and which are best known to me by the experiments which I have made. *Beardless winter wheat*, white wheat of Flanders, is one of the most beautiful of the varieties that are cultivated in France. *Blé blanc de Hongrie*. White wheat of Hungary is remarkable for the very round form of its grain. *Blé de Talavera* has been very much multiplied within some years in England. Its straw is tall, ear long, fine white grain of a long shape. *Blé de Haie*, hedge wheat, has a large head, the chaff of which is covered with down. This wheat was sent me from England, and appears to be a very fine kind. Although it was sent me under the name of hedge wheat, I am not certain that it is the same which is described under that name by Mons. Tessier. *Blé Lammes*, Lammes wheat, is red, forward and productive. It should be sown early, and will not succeed on moist land. It is apt to shatter, and requires on that account to be cut before it is entirely ripe. *Blé d'hiver barbu*. Bearded winter

wheat. Head very long, grain hard and heavy, straw large and yet apt to lodge. This wheat is remarkable for its great forwardness, and can be sown in the spring as well as in the autumn. It has a variety which is red and beardless, and which only differs from the bearded in these two respects. I owe both to M<sup>ons</sup>. Durand of Metz, a distinguished farmer. *Blé poulard blanc*, white poulard wheat. This grain belongs to the species of large bearded wheat called *poulards*, the grain of which is generally of an inferior quality and but little esteemed. But the white poulard is decidedly better in this respect than the rest, while at the same time, it has with them the merit of being very productive, both in grain and straw, and is more hardy than the finer wheat. Its straw is full and hard. *Blé bleu conique*, conical blue wheat, is one of this same species of poulards, and is distinguished for the great size of its grain and the abundance of its yield. *Blé de miracle*, *Triticum compositum*, or Egyptian wheat, is remarkable for its branching head, that is composed of many heads united in one large head. It has a very large round grain. Although this wheat has been at different periods very much extolled, and has the merit of being very productive, the culture of it is but little extended, because it is difficult to suit it with a proper soil, and it makes a coarse and indifferent flour. It is extremely apt to degenerate and to dwindle to a single head. The straw is full and very hard. *Blé de Pologne*, Polish wheat, is distinguished for the great length and size of its heads, the meshes of which are of an extraordinary dimension; it is also remarkable for the form of the grains, which are very long and as hard as glass. Its appearance causes it to be called Polish or Russian rye. This wheat is of a good quality, but I have always found it of a small yield. It can be sown in the spring, although autumn is preferable; in the last case it fears humidity more than the other kinds of wheat. It is less exacting than the most of them in respect to the quality of the soil that it requires. It succeeds quite well on sandy lands suitable for rye. The straw is long, full, and hard. *Froment de Mars*, *Triticum sativum vernum*, spring wheat. This grain is not cultivated as much as it deserves to be. If excessive rains, an inundation, or insects have destroyed, or very much injured the fields of wheat sown in the autumn, or if the farmers by an unfavorable and wet season have been prevented from sowing their grain, it results in a deficit sometimes considerable in the crop of wheat, which could be obviated by the different kinds of spring wheat, if their culture was more general and extensive than it is. This resource could the more easily be extended because spring wheat will grow on much land too light for those kinds sown in the autumn. Among the varieties of this grain we will name the following. *Froment de Mars à épi blanc, sans barbes*. White beardless spring wheat, is the most cultivated about Paris, but it is more frequently found mixed with the following kind than pure. *À épi blanc barbu*, white bearded, is a little more forward than the preceding. *Rouge sans barbes*. Red beardless. A variety which I have received from the north, and which appears to be very good. *Carré de Sicile*, red, short, stout and beardless. *Trimeria barbu de Sicile* is forward and yields well.

*Blé Fellemberg*, straw and head as long as in the winter wheat. It is subject to shatter and for that reason should be cut a little before it has matured.

*Blé Pictet*, is a variety of the preceding; its chaff retains the grain better and it is equal if not superior in other respects. *Blé d'Odessa et de Taganrock* have in the numerous experiments made in France succeeded generally very well. It is however difficult to class them, because most frequently the parcels imported under these names have been found to be a mixture of many varieties. That which predominates resembles the *Trimeria barbu de Sicile*.

*Blé de Cap*, Cape wheat, has a nice, yellow, hard and full grain. In my experiments in 1822 it withstood the drought better than almost any of the other kinds of wheat.

These different grains should be sown in the middle of April, and if necessary even on the first of May, but they should not be sown so late as that through preference. Those which have appeared to succeed best when sown so late are the *white bearded*, the *Carré de Sicile* and the *Trimeria barbu*. For many years there has been recommended under the name of *blé de Mai* (May wheat) a variety of grains which are said to be sown in that month with entire success. Some comparative experiments have proved to me that these are only the spring wheats already known, and I am convinced that we possess no wheat exclusively adapted to late sowing and which really merits the name of *blé de Mai*.

*Epeautre*, *Triticum spelta*, spelt wheat,\* is on account of its hardihood a useful species in cold and mountainous regions, or in very tenacious lands, where it succeeds better than any others. Flour from the spelt wheat is superior to all other, but the grain is very difficult to extract from the chaff.

There is a spring variety which is esteemed in some parts of Germany; it is called *Epeautre de Mars*.

*La petit Epeautre*, *Triticum monococcum*, is equally remarkable for the facility with which it grows on indifferent lands, even on those suitable for rye. It is the plant cultivated in some cantons under the name of *Riz sec*, (dry rice.)

*Mais*, *Blé de Turquie*, *Blé d'Indie*, Indian corn.

The utility of this grain for man and beast is well known. Corn delights in good ground, but will grow tolerably on those of an inferior quality, which however must be manured. It may be planted from the end of April, to the last of May, at pleasure, in straight rows about three feet apart, and about two feet apart in the row. Some plant it closer in the row, but then it is necessary to increase the distance the other way. They give it two or three workings, placing fresh earth about the plant at each, and at the last they hill it up entirely. They pull off the shoots and suckers that come near the root. They cut the tops above the last ear after the fecundation has taken place, which is known to be the case when the pistils which hang from the top of the ear, like a silken beard, become dry and black. These parts taken

\* This is the principal wheat of Saubia and the north of Switzerland, and is also a good deal grown in Spain.

off make excellent food for the cattle. The maturity of the ear is readily discovered by the dryness of the envelope which encloses it. They then get it up at a dry season, cutting the stalks; it is put in a granary, or what is better if the year has not been a warm one, they tie it in bundles, and hang it up in the sun, or in a covered place, that it may become as completely dry as possible. The cultivation of corn has the advantage of *ameliorating*\* the land, by the diminution of the waste lands (*jachères*) and by the frequent ploughings and weeding that it requires. The varieties of this grain are very numerous, they are of all colors; those most esteemed are yellow and white. The most common corn in France is yellow and has large grains. They cultivate in the department of Landes a beautiful white corn with an ear stouter and more conical than the afore-mentioned variety. It is more forward, and of an excellent quality. There has been recommended in the last four years a Pennsylvania corn, apparently more forward than ours, and on that account is of more value to our centre departments. I have received lately from the United States, under the name of *Sioux* corn, a variety similar to the preceding, but with ears and grains much larger. Also a pearl corn, white, very small and very nice, but ripening badly and which appears peculiarly adapted for forage on account of the great quantity of stalks and leaves. Among the earliest varieties we will mention the two following as the most worthy of notice:

*Mais quarantain*, quarantine corn, is not so tall, and not so productive as the common corn, but much more precocious; for instance, in Piedmont it comes to maturity when planted in June and July on the stubble fields from which a crop of grain has been reaped. This quality permits it to be cultivated much more to the north than the larger varieties, and renders it truly interesting to our country.

*Mais a poulet*, chicken corn. We owe this pretty kind to Mons. le Comte Leieur who brought it from America. It differs from the last named in that it is smaller in all its parts, and still more precocious. The smallness of its grain and the use to which it is put are indicated by the name. In respect to its product, it cannot be compared to the *quarantain*, but it possesses in a still greater degree, all the advantages attached to a remarkable precocity, which renders it truly valuable. These two varieties should be planted thicker than the larger species.

In the northern parts of France, corn, considered only as forage and without any view to the gathering of the grain, offers one of the most precious resources imaginable, for green food in the stables of oxen, cows, and even horses. By planting it successively, every fifteen or twenty days on the waste lands, from the first of May to the middle of July, they procure during three of four months an abundance of the best green food that can be grown. It is necessary for this to manure the land in the spring, or the corn in the hill. Plant it in rows about two feet apart, and with the plough and the hoe care should be taken to keep the land in perfect order, in which case

an excellent crop of wheat may be obtained after this crop. It should be cut when the male flowers (the tassel) begin to show their points at the top of the plant, and you may continue to cut after it is in full tassel. If there is a superfluity of it, the surplus should be dried, and will make a good food for cattle in the winter. I cannot, after my experience, too highly recommend to farmers this mode of using corn, which adds to the advantage of maintaining the cattle for many months, that of a great augmentation of manure.

#### PRESERVATION OF BUTTER.

From the Agriculturist.

Henry Wood, of England, has transmitted to the council of the Royal Agricultural Society, a jar of butter, as a specimen of the successful mode adopted for its preservation when the article is intended for export to foreign climates.

Mr. Wood informed the council that this butter had been prepared on the 19th inst., according to the process adopted in eastern countries, where it was used for culinary purposes instead of hog's lard, which the Mahometan law prohibited, and would keep for any length of time in a perfect state of preservation, although it contained no salt, or other additional substance. This preservative state of the butter was induced by the removal of scum, and the dissipation of the watery particles of fresh butter, effected by the gentlest possible application of sufficient heat to produce the result. Mr. Wood stated that in Asia this gentle heat was obtained by the natives by filling a large open earthenware pan with powdered and well-dried cow-dung, and then setting fire to it, introducing into the midst of the burning cow-dung an earthen vessel containing the butter, which became melted; and when the scum, as it rose, had been successively removed, and the watery particles driven off by the heat, it was poured into a jar, and preserved for use. Mr. Wood suggested that a sand-bath, properly regulated, might answer the same purpose as the dried cow-dung, and as the process was so very simple, there could be no difficulty in preparing it; and that, when once prepared, the butter never "became tainted." Mr. Wood stated that he carried with him to the Cape of Good Hope some butter prepared in the same way, at Col. Skinner's farm at Hansi, to the westward of Delhi, a year previously, and which was pronounced by the agriculturist, Mr. Duckett, and others, to be superior to the salted butter of the colony; and, for culinary purposes, far superior to lard.

#### INCOMBUSTIBLE WASH.

From the Franklin Farmer.

Slack stone lime in a large tub or barrel, with boiling water, covering the tub or barrel, to keep in all the steam. When thus slacked, pass six quarts of it through a fine sieve. It will then be in a state of fine flour. Now, to six quarts of this lime, add one quart of rock or Turk's Island salt, and one gallon of water, then boil the mixture and skim it clean. To every five gallons of this skimmed mixture, add one pound of alum, half

\*This does not tally, I think, with the experience of Virginia corn planters.—TRANS.

pound of copperas, by slow degrees add three fourths of a pound of potash, and four quarts of fine sand or hickory ashes sifted. We suppose any kind of good hard wood ashes will answer as well as hickory. This mixture will now admit of any coloring matter you please, and may be applied with a brush. It looks better than paint, and is as durable as slate. It will stop small leaks in the roof, prevent the moss from growing over and rotting the wood, and render it incombustible from sparks falling upon it. When laid upon brick work it renders the brick impervious to rain or wet.

#### NOTES ON SANDY POINT ESTATE. NO. IV.

To the Editor of the Farmers' Register.

*Sandy Point, October 3d, 1841.*

I had purposed in this communication to have given you an account of the stock of cattle, hogs, &c., on this estate, but have delayed it until present arrangements are more fully matured; and, in place, proceed to give a few memoranda connected with the wheat crop, sown in the fall of 1840, and reaped 1841. Ploughing upwards of 400 acres of clover and weed fallow for this crop (covering of vegetable growth heavy, and land of good quality,) was begun on the 25th of July, and finished on the 19th of September; (during this period wheat thrashing had to be performed, which of course caused necessary delay in fallowing). The whole was performed by three-horse ploughs. With very little exception, the season throughout was dry, and the larger proportion of the ground consequently dry and hard, which very greatly increased the labor and time occupied in this important operation. The whole was, however, finished in generally good condition; heavy harrows, having 25 teeth, passing over and levelling the whole, going once or oftener over the ground as its condition might require. In addition to the above quantity of clover and weed fallow, were 36 acres of oat fallow, the oats having been ploughed under early after ripening. On 20 acres the crop of oats ploughed under was very inferior, as was also the after growth. On the other 16 acres the crop was heavy, and the second or volunteer growth thickly and regularly set, but, in consequence of the drought, was short.

Sowing wheat was begun on corn ground on the 10th of October; the weather and ground being very dry, induced some days' delay, in hopes of having rain. On the 13th left off sowing on corn ground, and commenced on fallowed land. No rain fell until the 20th of the month, when we had a refreshing, and much needed, but moderate rain, which greatly facilitated our operations; and again on the 29th, a heavy fall of rain, which entirely retarded all operations connected with sowing, for a day and a half. On the 9th of November sowing was completed. On clover and weed fallow were sown 380 bushels of mountain purple straw wheat, and 315 bushels of "white turkey" = 695 bushels. On oat fallow were sown 34 of purple straw and 42 of white turkey = 76 bushels. On corn ground were sown 192 of purple straw and 281 of white turkey = 473; being in all 606 bushels of mountain purple straw, and 638 of white turkey wheat = 1244 bushels, the total quantity sown. All the wheat before being sown, was previously washed, light grains skim-

med off, and then rolled in lime. With the exception of 20 acres of fallowed land and about 40 acres of corn ground, where the land was previously ploughed, and the seed sown and covered with the heavy harrow, the entire crop, both on fallow land and corn ground, was first sown and then covered with two-horse mould-board ploughs, followed by heavy harrows as frequently as occasion might require. The wheat was thus deeply covered, and I think suffered much less injury from the frequent frosts and thaws of winter and early spring, than that merely covered by the harrow in the usual mode. Water furrows were carefully opened, and the whole left in as good condition as could be obtained. Sixteen two-horse ploughs and seven harrows, having three yoke of oxen to each, occasionally aided by an extra harrow and two horses, were employed during the whole time of sowing, and occupying in all 24½ days, being an average of rather more than 51½ bushels of wheat per day. The wheat, with the exception of the sowing of the last two days, vegetated freely, and presented a beautiful and regular appearance. The exception above stated presented little appearance of vegetation for some weeks, the weather having been unfavorable, nor did it present a promising appearance until the following month of March. So far as could be observed, there was no fall attack of Hessian fly. The winter, as will be recollected, was unusually wet, and, in consequence, on some portions of the wheat injury was sustained, particularly in bottoms liable to be flooded by each successive heavy rain; but altogether it stood the winter remarkably well, and at the end of March the general appearance of the crop was very promising. The rains and cool weather, which prevailed during the early portion of April, caused the crop to assume a generally yellow appearance. From the 24th of that month until the first of May, the weather was mild and favorable, and which soon restored the crop to a healthy and vigorous appearance. After that period frequent frosts occurred, with cold north and north-west winds, which again inflicted injury on the crop, nearly all the extremities of the leaves being killed, and imparting to the whole a yellow tinge. About the 3d of May, Hessian fly made its appearance on most of the wheat sown on corn ground, and by the 10th of the month, was found generally over the whole crop. From this date, however, the wheat began most rapidly to improve, and by the 17th presented a pleasing and gratifying appearance. The flowering season passed over under highly favorable weather, affording every prospect of a profitable and remunerating crop. It was at this period of its growth estimated that the then probable return from the crop would not fall below an average of ten bushels for one bushel of wheat sown, and the uniformly promising appearance of the crop certainly justified such an estimate. Several gentlemen, who had opportunities of seeing the crop from this period until harvest, estimated the probable return at a much higher rate. The sequel of this communication will show how far such expectations were realized. The weather was now very favorable to the properly maturing of the crop, but from the above date to the 24th of June, (when harvest was begun,) frequent showers occurred, as also warm, damp and cloudy weather,



during which rust made its appearance in several portions of the crop; but, as far as could then be judged, not to an extent likely to prove very serious.

I will here add a daily journal of our harvest operations, which will perhaps best show what were the hopes and fears induced during this interesting operation, and which you may either include or omit as you may judge proper.

June 24th. At half past 7 A. M., commenced wheat harvest, on Upper Quarter, with 27 cradles, the necessary gleaners and a sufficient number of hands for shocking. Wheat sufficiently ripe, and presenting a fair crop generally; some of it heavy; all on fallowed land; wheat, mountain purple straw. Progress, after getting over the usual delays of a beginning, satisfactory; weather warm, moderated by a gentle breeze from the south. Evening slightly clouded; increase of wind; indications of rain.

25th. A shower of rain early in the morning, prevented our resuming reaping until half past 8 A. M. Wheat still damp and unfit for shocking. Twenty-seven cradles employed. With the exception of about two hours in the evening, the entire day, from frequent showers and continued cloudy weather, was highly unfavorable for harvest operations, causing several protracted delays. The wheat cut to day was chiefly the white turkey, on corn land at Rowe, and the earliest sown. A portion of this was a heavy growth, the larger proportion a medium crop, the sample of grain good, straw generally short. Rust had slightly injured a small portion in a bottom, where the wheat was not so fully matured. Only a small portion of this day's reaping has been shocked up. A heavy shower stopped all work about half an hour before sunset; night weather still clouded and threatening.

26th. Started reaping this morning at half past 8 o'clock. Having added our ploughing force of 15 hands to aid in harvest operations, the number of reapers were increased to 33 cradles, and to aid in shocking, were frequently reduced to 27, in order to avoid wheat getting wet from passing showers. Operations of this day were confined to turkey wheat on fallowed land at Rowe. The crop apparently excellent, much of it of very heavy growth; the sample of grain also looks well. A considerable space of ground has this day been gone over. Wheat fully ripe; all shocked as reaped. The whole of the crop is now ripening rapidly; probably not less than 300 acres are now fully ripe. The weather continues extremely unfavorable for harvesting this valuable crop, and causes deep anxiety as to the safety both of what is reaped, (a portion of which is not yet shocked,) and that which is yet standing. Add to this that where not fully matured, wheat is becoming seriously affected by rust; and if this unfavorable state of weather should continue, the most serious injury is in many respects to be apprehended.

27th. Sunday. First half of this day, continued showers. Cleared off at noon; evening clear, with a good drying breeze.

28th. Morning, slight dew; resumed reaping at sunrise on Brickhouse lot, fallow, of 20 acres; purple straw wheat; crop very heavy. Reaped also House lot of 20 acres, after corn; purple straw; crop here also good, but seriously affected by rust. Reaped also that portion of the crop

near negroes' quarters, of 16 acres, white turkey wheat, after oat fallow; crop here very heavy, portions of it much lodged, and some injured by rust. From 32 to 36 cradles were employed. Of the 56 acres reaped to day, from its generally superior growth, there may reasonably be expected an average yield of from 25 to 30 bushels per acre; the appearance of the grain is good. The weather throughout the day has been most favorable for our operations; for three hours in the evening, very hot. The laborers, however, stood their very hard labor well, and in good spirits. The weather has now fortunately become promising and favorable, and I hope may continue so until we finish.

29th. Began reaping this morning at sunrise, on Upper Quarter, fallow field, purple straw wheat; from 37 to 40 cradles employed. Wheat of this day's reaping rather light, but quality of grain apparently good; all shocked up. The weather to-day has been clear and warm; a few hours very hot. Laborers suffered considerable inconvenience in consequence; four reapers became unwell and unable to work during a portion of the evening, three of them hirelings who began this morning. A large portion of ground has been gone over to-day, I think not less than 90 acres, all of it less or more injured by rust, yet the grain looks plump and good. Wheat now very ripe. A gale of wind would now do serious injury to the larger proportion of our uncut wheat. And nearly all is fully ripe, and is the cause of much uneasiness, as it ripens faster than it can be cut down, rapid as is our progress.

30th. Thirty-three to thirty-eight cradles employed to-day. Finished reaping at Upper Quarter early this morning, and resumed reaping white turkey wheat on Rowe lot; the crop here excellent. The whole of this day's reaping very ripe, and all shocked up as reaped. The weather all day clear, dry and very warm; laborers suffered considerably.

Hussey's reaping machine was received early this morning, accompanied by himself, and after some little delay was got into operation about 3 P. M., and after a short trial and some experience on the part of the laborers and teams employed, performed its work beautifully. Cleaner reaping I have never seen. That portion of the crop, on which this first trial was made, was of a fair medium growth, (our heaviest wheat having been nearly all reaped,) in which, including several delays from the awkwardness of the hands employed, it very nicely reaped fully at the rate of one acre per hour, laying the wheat in nice and handsome sheaves for binding. All the operations connected with reaping it performed infinitely better than that done by the cradles.

July 1st. Began reaping on fallow wheat on Rowe; 34 cradles employed. Nearly all of the wheat of this day's reaping has been rather light, for two hours in the evening the growth was heavy. The whole would average a fair crop; quality of grain good. A quantity of wheat remained at night unshocked. The whole very ripe and liable to very serious injury, in the event of rain or high wind. Our harvest operations are now hastily drawing to a close. The weather to-day has been very fine, though very warm; towards night slightly clouded and rather cooler.

Hussey's reaping machine was again started



this morning so soon as the dew had dried off, and after some little delay, caused by a bolt becoming loose and dropping out, performed its work admirably. After reaping the piece of wheat where first tried, it was put to reaping a heavier growth, which it performed with great facility and neatness. Three horses were harnessed to it, with a driver, a raker, and eight hands to bind up the sheaves. So far as the trial has yet progressed, it fully promises to come up to the anticipations formed by the inventor. The quantity of ground gone over to day is nearly equal to one acre per hour, and it is evidently capable of performing from one-third to one-half more, as the laborers become more efficient.

2d. Finished reaping at Kowe this morning at half past 10 o'clock, and began on the Neck farm a little before noon, and finished before sunset. On the corn land on the Neck farm, the crop was light and more infected with rust than any yet reaped. The grain did not look much injured, so far at least as could be judged by the eye. On a portion of oat fallow ground, and which on the preceding year (1840) was considered too poor to produce a corn crop, but on which lime had been applied in the fall of the year previous to sowing wheat, at the rate of 96 bushels per acre, never have I seen the benefits of lime more strongly exhibited. The growth was here heavy, and was judged would yield 25 bushels of wheat per acre. From 35 to 38 cradles were employed during the day, and a large portion of ground has been gone over. The weather throughout the day was warm, but not so oppressive as for several days previous. A shower early in the evening passed over the upper portion of the estate, but none fell where we were reaping.

Hussey's reaping machine was again started this morning, but had performed very little work when the large propelling wheel became loose, and shifted its position, and before it could be again put to rights, caused the loss of a half day's work. After remedying this defect, the machine performed well for the latter half of the day.

3d. Early this morning a heavy shower of rain; before which got up all reaped wheat into shock. Forty-two cradles started reaping, as soon as the shower passed over, at Teddington; and, after some partial delays from rain, finished reaping all, with the exception of about one acre, left for reaping with Hussey's reaper, on Monday. The weather throughout the day has been very unfavorable for harvesting; and, from nearly continued slight rain all day, nearly all of the wheat cut is yet to shock. Our harvest operations may now be considered as nearly completed, and on the whole have been satisfactory. After deducting delays from rains, during the first three and this last day, the time occupied will be about eight days. The laborers, including hirelings, have wrought well and cheerfully. As was to be expected, amongst so many negroes, frequent reproofs and admonitions were necessary; it is, however, a gratifying retrospect that in no instance was corporeal punishment deemed necessary, or indicted. The crop has proved, so far as can now be judged, a good one, and I gladly hope may not subsequently disappoint in its expected results.

5th. Finished reaping remnant left with Hussey's reaper, which performed well. All wheat now shocked up, presenting a total of 2501 shocks, judged to average from 4 to 4½ bushels each.

Threshing out of this crop was begun by two machines respectively on the 21st and 24th of July. With the exception of occasional showers at night, the weather proved favorable until the 9th of August, when a succession of heavy rains and cloudy warm weather occurred, until the 16th, causing a delay of five days, and during which period the wheat in the shocks, where exposed, sprouted considerably, exciting serious fears of a heavy loss from that cause. The weather and condition of the wheat having again become favorable, threshing was resumed and continued until the 21st of August, when completed. During this operation the extent to which rust had prevailed, over nearly all of the crop, was alarmingly exhibited. Never have I seen as much rust in any crop; every portion of the barns and laborers employed presented the appearance of having been heavily powdered with red lead, and where left to accumulate undisturbed, could have been taken up in handfuls, frequently causing sickness and vomiting among the laborers. These appearances, together with the rapidly increasing piles of straw, and slowly increasing bulks of wheat, too plainly foreboded a serious falling off in the crop. The following results will show to what an unexpected extent these fears were verified.

	Bushels.	
Sold of white turkey wheat	2697 $\frac{3}{4}$	} = 4931 $\frac{3}{4}$
" purple straw "	2234 $\frac{3}{4}$	
Retained for seed of white	600	} = 1600
" " purple s. 1000		
	6531 $\frac{3}{4}$	

In the above statement are not included 85 bushels of sprouted wheat, nor a small quantity of inferior wheat, which may yet be fanned out from tailings. It presents, however, a truly mortifying result: being at the low average of 5  $\frac{3}{4}$  bushels for one sown of white turkey wheat, and 5  $\frac{3}{4}$  bushels of mountain purple straw for one sown. During harvest and the operation of threshing, the prevalence of rust excited fears for the result, but no idea was entertained of such a falling off. Since I have been in Virginia, I have not seen a crop which altogether presented so promising an appearance before and during harvest, nor have I ever seen a result which fell so far below reasonable expectations. The causes producing such a result were evidently beyond human control; rust, in my opinion, being altogether, or very nearly so, the sole cause, though Hessian fly was generally over the crop, as also chinch bug in some places; yet, so far as could be judged from frequent and careful observation, they effected little or no injury. The white wheat weighed per bushel from 56  $\frac{1}{2}$  to 58  $\frac{1}{2}$  pounds, the purple straw from 58 to 61  $\frac{1}{2}$  lbs. The heaviest white wheat was from limed land, on clover fallow, and the heaviest purple straw from fallowed land, but which had not been limed. The results, low as they are, are in favor of the purple straw variety, though not, in this instance, to an extent which would warrant the giving to it a decided preference, but yet sufficient to have induced our altering of the amounts of each variety retained for seed this fall; as during the reaping and threshing of the late crop, it had been concluded to reserve 900 bushels of white wheat, and 700 bushels of purple straw for seed, as it was then considered that the former variety was likely to prove the most productive. The results, how-

ever, proving in favor of the latter variety, 1000 bushels have been reserved, and 600 of the former. There appears to me to be a want of practical information as to the best, most productive, and profitable varieties of wheat. Could you not induce some of your experienced correspondents to furnish some information on this matter of importance? Too late now, for this season; but would be valuable in future. I could mention the names of some gentlemen who could well furnish such information; but as the introduction of their names by an individual so humble might look like presumption, I leave the request for others more influential, and none more so than yourself. If I have not already exhausted your patience, and occupied too much of your space, you shall soon again hear from me. A. NICOL.

#### CULTURE OF THE TOMATO AND THE INDIAN PEA.

To the Editor of the Farmers' Register.

Among the multitude of matters both in agriculture and horticulture which are well worth knowing, but still unascertained, I have thought it might be useful to invite the attention of our brethren to two, wherein all of us are more or less interested: I mean the culture of the tomato and the Indian pea. Both are favorite vegetables on all southern tables; and both, especially the latter, are very valuable for other purposes. There is no leguminous plant yet known to us, comparable to the Indian pea for feeding stock; and many farmers believe that, when fed in the dry state, they will fatten either horses, cattle, sheep or hogs, sooner than Indian corn. The ripe tomato is greedily devoured by all domestic fowls, and cows will eat the vines with great avidity—to say nothing of the good medicinal qualities imputed to the fruit. These are facts, I believe, which all will admit. Yet, strange to say, I have never yet met with any farmer or gardener who had ever taken the trouble, little as that would be, to ascertain how either tomatoes or peas could be rendered most productive; or which among our numerous varieties of the latter ripens the soonest; or which will yield most; or how many bushels per acre may be calculated on as the average product from ordinary land, of any one variety of the whole.

The usual management of the tomato is, to rely on volunteer plants, which will certainly produce degenerated fruit in a few years. These plants are set out in vacant spots about our gardens, where they are suffered to grow with little or no culture, and without frames or sticks to support them. Now there are very few if any of us who do not know perfectly well, that the vines when properly supported, in good garden ground, and planted single, about four or five feet apart, according to the fertility of the ground, will grow to the height of five or six feet, and produce far better than in the common, careless, slovenly way. But none of us, I believe, has yet troubled himself to ascertain how much more a single vine so treated will yield, than one left as usual, almost to take care of itself. Country gardeners, perhaps, will deem this of little or no importance, for they always assign to the kitchen garden more ground

than enough for their families, if they would only learn to economize space, in this particular. But surely, in towns, where gardens are necessarily small, the difference between the product of a well supported and cultivated vine, and one left to spread on the ground, is well worth ascertaining. Judging from my own observation, and the information obtained from others, I believe that a single vine supported by sticks four or five feet high, or by a frame of the same height, which may easily be made by four or five upright sticks, about 15 inches apart each way, with a twine string passed spirally around them five or six times, and tied at each end, would produce nearly or quite double the quantity that another vine would which was left without support. Bridgman, in his "Young Gardener's Assistant," asserts that "a single vine has been known to produce upwards of a bushel of fruit." At this rate, or even at three pecks per vine, half a dozen of them occupying no more than 32 square feet, would produce an abundance for a whole family of ordinary size. This excellent vegetable is now seen on almost every table, whereas it was hardly ever used fifty or sixty years ago. Then, it was generally called "love-apple," from ignorance, perhaps, of its other name. But even now, there are some who are still very wide of the mark, in aiming to hit its foreign title, "tomato," for they pronounce the word as if it were spelt "chu-mar-tue-iz."

The Indian pea is still more valuable than the tomato, since it is not only prepared by many for the table, but, as a marketable article, some of its numerous varieties, of which I myself know at least twenty,\* sell readily at an average price of

\* Eight of this number bear the general name of "crowder," from the circumstance of their growing so much closer in the pod than the peas of a long shape like the snap-bean, that each perfect pod contains usually about one-third more peas than an equally perfect pod of any of the long-shaped varieties. Of the crowders I have seen the following kinds, viz.: the black, the white with black eyes, the pale, yellowish clay colored, the gray, the sugar, the purple hull, the claret colored, commonly called the red tory pea, and the small, reddish-yellow crowder. Of the other varieties, (not crowders,) I recollect four that are white with black eyes, and varying chiefly in size, the largest being considerably larger than any other pea I have ever seen. There are two kinds which may be called white, but less so than the four first named: one has a pale greenish eye, and with us is called the North Carolina pea; the other is of the same shape and size, but has a reddish eye. Then there are the white and red mottled pea, the cow pea, the black tory pea, the small lady or gentleman pea, and the green or Chickasaw pea, which is the smallest of all, and the only one whose vines do not run. Hence they are preferable to all, where the purpose is to use pea vines as a green dressing. Each of the above-mentioned varieties has several local names, which I do not recollect, or I would give them, as it might make all the kinds, perhaps, better known than my general description. For instance, one of them (the gray crowder) I remember to have heard called "the Jefferson pea," although that gentleman probably knew as little of Indian peas, as he did of many other agricultural matters, having been nearly all his life engaged in the public service. But the title, I presume, was bestowed from that same degrading, contemptible species of man-worship which has, at different times, conferred the name of every president that we have since had, on gentlemen's hats, boots and shoes, and on ladies' caps, bonnets, shawls and ribands, &c.

one dollar per bushel. When, moreover, we estimate its fattening qualities for stock, its superiority on land too poor for clover, to any thing yet tried among us as a green dressing for the soil, and the fact that no kind of long forage is better for farm horses, mules, cattle and sheep, than the pea vines properly cured, as they easily may be, we surely ought to take more trouble than any of us, I believe, have yet taken, to ascertain every thing in regard to this highly valuable plant that can be certainly known about it. For instance, we might certainly ascertain which is the earliest of all the varieties that are cultivated in Virginia. We might also ascertain with certainty, by a few comparative trials, which of all the varieties was most productive; and how many, or nearly how many bushels, on an average, each kind would yield per acre, when cultivated in ordinary land. Another point, too, which is of some importance, at least in the garden culture of the Indian pea, might readily be determined, and this is, the difference in quantity between the vines stuck like pole beans, and those suffered to run on the ground without support. I have reason to believe that the former would produce double, and from a smaller surface of ground. This practice would be too expensive for field culture, but certainly it would be far preferable in a garden, for a small square in Indian peas would then yield full as much, and probably more, than one of the same size in pole beans.

The old adage, "*de gustibus nil disputandum*," there is no disputing about tastes, forbids me to make any positive assertion as to which variety is best for eating. But I will venture to add, for the benefit of those who may not possibly have met with the particular variety which I have called the North Carolina pea, that every person I have ever met with who has tried it, prefers this kind to all others. A gentleman from that state informed me the other day that the same preference is given to it there also. For my own part, I deem all good, and I have tasted all, except the black and red tory-pea, and the Chickasaw. This being the only one whose vines do not run, is best for a green dressing to land, as they can more easily be ploughed in than any running vines. They will grow in land of medium quality, to the height of about four feet, each plant throwing out numerous long, succulent branches, the leaves of which are uncommonly large, and when planted from three to four feet apart each way, with two or three stalks in a hill, they will completely cover the ground, as soon as they attain their full growth. This they will not do sooner than some time in September, as they ripen late, and of course should be planted early.

I will close this letter by a brief statement of a method of curing the vines, recommended to me by one of your old correspondents, the late Mr. Herbmont, of South Carolina, a gentleman highly distinguished, as you well know, for his intelligence and zeal in the cause of American husbandry. This is the method: pull up the vines when fully grown, expose them to the sun until they are somewhat wilted, but not dried; then stack them in alternate layers with straw, either of wheat, oats, or rye, sprinkling a little common salt on each layer of the vines, and top the whole with a sufficient quantity of straw to prevent the stacks from leaking. This process converts the

layers of staw into a provender nearly equal to the vines themselves; and the whole soon becomes a richer long forage for farm horses, cattle, and sheep, than any kind of hay or corn-fodder; and may easily be made on farms destitute of meadow land. The vines of all the varieties of Indian pea might be thus cured; and since all will produce, on poor land, a heavier growth than any other plant which we could cultivate for hay, on such land, no farmer need ever to want long forage enough for his stock, unless he keeps more than he ought to do. But this is an error, that almost every Virginia farmer commits; and what is most remarkable is, that none are more guilty of it, than a large portion of those who declaim most against the practice. Thus endeth all that you will hear at present, from your old friend,

JAMES M. GARNETT.

P. S. Our eastern brethren, I believe, are generally ignorant of what we call Indian peas; for none of the varieties are cultivated in any of the eastern or northern states, at least I have never seen any growing farther north than Maryland. That they would succeed well in a higher latitude seems to me highly probable, and I am sure they would be much valued, as a vegetable for table, were they once introduced.

#### TOMATO TART.

From the Boston Cultivator.

A lady sends the editors of the Saturday Courier the following recipe for making tomato tart:

"Roll out your dough very thin, and place it on the plate in which you intend baking your tart, and slice your tomatoes very thin, spread them over the dough very thinly, take about two table spoonfuls of brown sugar, and one of ground cinnamon bark, spread the two over the tomatoes, bake it well, and you have a delightful tart.

#### AN ATTEMPT AT FATTENING QUALITIES OF WOBURNS AND BERKSHIRES WHEN FED ON THE SAME ALLOWANCE.

From the Kentucky Farmer.

"There was put under my care on the 13th August, by Dr. Martin and James F. Taylor, two Woburn\* and one Berkshire sow, for the purpose of being fed; and I received directions to give each one five pounds of corn a day, and to increase the quantity until I should find what quantity the smallest eater of the three would consume.

On that evening, I gave to each one of them two and a half pounds of corn, and the next day five pounds each, and on the 15th, nearly six pounds each; one of the Woburns (Patience) failed to eat all of her allowance, and the next day was very lame, (I suppose slightly foundered,) and their food was again reduced to five pounds each per day, until the 20th, when Pa-

\* Mr. Duncan, who first accepted the proposal, was sick at the time, and his sow had met with some accident, so she was not fed.—M.

tience having recovered, it was gradually increased so as to give each one fifty-two pounds of corn in the ten days, when they were weighed, and the following is the result:—

Mr. Taylor's Black Berkshire sow	
Belinda, gained	- 21 lbs.
Dr. Martin's Woburn Patience,	
gained	- 21 "
Dr. Martin's Woburn Courtenay,	
gained	- 30 "
JAMES WEATHERS, JR.	
Clarke County, Ky., Aug. 23, 1841.	

#### A PHENOMENON IN GRAFTING.

From the Yankee Farmer.

Van Mons, one of the most intelligent horticulturists that ever lived, once tried an extraordinary experiment in grafting; that of inserting an *entire tree* on the stump of another.

A neighbor having in the spring season cut down an apple-tree, about fifteen feet high, which Van Mons considered a desirable kind, and a good healthy tree, he immediately selected a stock of similar dimensions, and cutting it off near the ground, placed on it, by the mode of *peg grafting*, the foster tree; supported the tree by stakes; and excluded the air from the place of junction, by plastering it with clay, and afterwards heaping earth around it. The experiment succeeded perfectly; the tree becoming in the course of the *second* season nearly as vigorous as ever. This experiment was more curious than useful, but as a fact in natural history it is deserving of notice. Few men would probably succeed in the attempt.

#### CULTIVATION OF THE PINE ON THE SHORES OF GASCONY.

From the New England Farmer.

Economy is the welfare of states, as of individuals. By economy, in its best and widest sense, is meant that just and wise distribution of means and efforts, which, out of the given conditions, produces the largest sum of good and happiness.

To spend little, is but one and a very meager branch of economy—in many instances no economy at all. In states, especially, to gather much is at all events equally important. When we look around upon the world, survey the numbers in want almost of their daily bread, while the earth given to man to be subdued and rendered productive by the labor of his hands, is still, in an infinite number of cases, totally without culture, and *never*, with a few rare exceptions, producing what it is capable by skill and industry of being made to produce, it is impossible not to believe that our knowledge of the science of political economy is in its very infancy—its true principles little practised or understood. Man is seen on all sides in that most affecting of all situations, willing to labor, crying for the privilege of being allowed to work, starving in want of the merest necessities of life, while the bounteous earth is spread around him, offering her liberal rewards for labor, and not finding hands.

What inexhaustible mines of wealth, yet unexplored, does the surface even of our own well-peopled and well-cultivated British islands present; what sources of riches, strength and happiness lie buried in the bogs of Ireland alone!

Soils far more ungrateful have, by a judicious and economical culture, been made the fruitful source of wealth and felicity, and perhaps there is no contemplation more useful and agreeable, than that of such a picture.

The manner in which sand hills, such as those which, covered with wiry grass, line many of our shores, have on the southwestern coast of France been rendered useful and productive in a high degree, is a striking example of well-directed and successful efforts of this nature.

In the departments of the *Gironde* and of the *Landes*, on the shores of that stormy ocean which raves between the mouth of the Gironde and Bayonne, the most magnificent pine forests are at this day waving, where not many years ago was nothing but a dreary and threatening desert of sand.

These forests cover an immense extent of land round Teste and the basin of Arcachon, and might be extended so as to cover the whole of the above mentioned coast, an extent of sixty French leagues, or about one hundred and fifty English miles.

Teste and the basin of Arcachon will be found, on consulting the map, to lie on the shores of the ocean, in the southern part of the department of the Gironde, from which the department of the Landes extends southwards. Every one in the least acquainted with French geography has heard of the Landes; of those immense level plains—and has pictured to himself their dreary monotony—their shepherds elevated on stilts and wrapped in gray sheep-skins, leaning upon their staffs, and watching, motionless, the flocks scattered over the measureless pasture.

The force of the western wind has raised upon this coast, as upon many others, hills of sand, from thirty to sixty metres in height, (a metre is something more than an English yard.) The French give these sand hills the name of *Dunes*: they are composed entirely of the dry sea sand, driven inwards in various places, as upon some of our own coasts.

These sand hills having attained a certain elevation, fall—are driven forward by the wind, and invading the plains behind them, menace the Landes with inevitable destruction.

Populous towns have fallen victims to the advance of this slow, but as it was long thought, irresistible enemy. The Dunes advanced annually, and the gradual destruction of the productive plains might be predicted with mathematical certainty. Even the city of Bourdeaux itself seemed doomed, sooner or later, to perish under this deluge of sand.

This state of things at last excited public attention, and towards the end of the last century, the means of arresting this fatal progression were sought for, and, as is the usual consequence of being sought for, found.

A man of the name of Bremon tier, we do not know whether he is yet living or not, imagined a method of staying the plague, and of rendering this element of desolation and despair a source of wealth and population. He formed and executed

the project of covering these moving hills with forests of pine (*le pin maritime*.) the roots of which, by conglomerating together these light particles, and forming them into heaps of solid earth, might fix them permanently in their place, and arrest their further progress.

Fifteen thousand *hectares* are now covered with the pine: those plantations which date from the time when Bremon tier began his operations, now present to the eye, in place of the desolate sand hills, magnificent forests, waving majestic above the restless ocean.

The *Dunes* extend sixty leagues, being in breadth from three quarters of a league to three leagues: the hills are intersected by valleys, called in the country *Ledes*.

The trees are raised from seeds, cast on the spot on which they are intended to grow—they are not transplanted: when the seed is sown, the moving of the light sand is prevented by covering the ground with brambles or young pine branches, fifteen hundred laggots of these being necessary to cover one hectare: the seeds are sown thick, and when the young plants are of seven or eight years, the first thinning is made. If there were any means of cheap transport, these thinnings, sold at Bourdeaux, would be extremely profitable. After this thinning the remaining plants grow with increased vigor, and in ten years reach the height of fifteen to twenty feet; at the end of twenty-five years they produce turpentine. A hectare of pines produces this article to the value of from 25 to 60 francs, (that is from £1 to £2 8s. sterling,) according to the age of the plants—a pretty considerable profit from land, which were once an unprofitable, and worse than unprofitable desert.

#### REPORTS OF THE MASSACHUSETTS AGRICULTURAL SOCIETY.

The answers of Abel Moore, of Concord, to the questions proposed by the Massachusetts Society for the promotion of Agriculture.

1. My farm contains about 130 acres, exclusive of woodland.

2. The soil consists of sand, gravel, peat and loam.

3. To reply in general terms, I consider the best method of improving my lands to consist in an interchange of soils; that is to carry the peat and mud from the low and wet land to the light upland, and in return, to carry the sandy loam on to the peat land and bogs. This method I have uniformly found to be beneficial. Both lands are benefited by the exchange. Each seems to supply what the other lacks. A few years ago, I had, in the midst of a piece of mowing land, a sandy knoll, entirely barren, containing about half an acre. This I covered with refuse peat, and sowed grass seed with rye. This grass immediately took, and I have had a good crop of grass on it for three years without manure.

4. I till about 16 acres, and put from 20 to 40 loads of compost manure on an acre, depending upon the kind of crop.

5. My manure is usually applied in a compost,

but sometimes for potatoes it is applied in a green state.

6. Sometimes I spread and sometimes I manure in the hill.

7. I turn the sod over as flat as possible and roll it down smooth with a heavy roller, then harrow it, spread on the manure, and harrow or plough it in lightly.

8. I mow from 5 to 6 acres of upland, which yields about two tons of hay to an acre. The great bulk of my English hay grows upon reclaimed peat or meadow land, which I do not call upland.

10. I manure all my English mowing [artificial grasses] about once in three years. I put about 25 cart loads of compost manure to an acre. I seldom make use of any except compost manure, and for the last four years I have purchased none, but made it all on the place.

11. I mow from 25 to 30 acres of low meadow land, part of which is situated on Concord river. The quality of the hay cut on this land is nearly one half of it swail hay, which is very good and spends well; the remainder is common meadow hay, some of which is of an ordinary quality. The quantity of this kind of hay is about forty tons. The greater part of this swail hay grows on the meadows that I have partially reclaimed, but do not manure.

12. The better to explain my answer to this question, I must be permitted to say a word with reference to the situation and former condition of my farm. It is situated about half a mile east of the Concord meeting house, on the great road leading to Boston. Its extent on the road is perhaps a quarter of a mile. On the north side of the road it runs back over the hill from three quarters of a mile to a mile. On the south side, with the exception of about two acres, it embraces all the piece of flat land lying between the great road and the turnpike, and perhaps 25 acres on the south side of the turnpike. The greater part of this land I purchased in 1825-6. After I had purchased, I found that I had on my hands a large quantity of unproductive land, part of which would produce nothing, because it was so wet and marshy, and the rest would produce nothing because it was so dry and sandy. The land back of the hill, where I now have some 30 acres or more occasionally under cultivation, was so much run out, that it was hardly considered worth cultivating, and a neighbor, who had the use of it one year, paid me no rent, because it was not considered worth any. It is true, that it sometimes produced blackberries, but if the season happened to be dry, even these could not be relied upon. The flats in front of the house, where I now cut my English grass, were composed of swamps covered with bushes, miry bogs, and pond holes, full of lily pads and flags, where the muskrats and bull frogs seemed to hold undisputed possession,—while on the higher land, the woodchucks made their burrows unmolested. This is not mere fancy. I once set an Irishman to clear up some bushes and briars there, and he was actually driven off by one of these animals. Between these bogs and the hill, there was a little strip of upland, which might have produced hay enough to keep a horse and cow, (I do not think it did more,) and this I verily believe constituted the most valuable production of the *Prescot Farm* as it was then called.

My first object was to render this land productive; but how to do it was the question. I had no works on the subject, and all the information I could get was what I could occasionally glean from the New England Farmer. One thing was evident, that the land must first be drained. There was a grist mill in the centre of the town, supplied by a stream that run through the land. I exerted myself to get this mill discontinued and it finally was discontinued. This however was insufficient to drain the land. In 1827 I commenced ditching it, and cut my ditches so low that the water would flow back to the head of them; that is, I commenced digging at the lowest part, and dug so low that the water would follow along after. I take especial care to level and slope down the banks of my ditches, so that now the grass grows down to the water's edge. This effected the object so far as draining was concerned, but it did not bring it into English grass. This was the next thing to be effected, and to do it I have tried various methods. I thought that I might plant a crop of corn and potatoes, and then lay it down to grass; but this did not work well, as most of it was too mired to be ploughed, and the ground even after bearing a crop would not become firm. I tried burning, but this did but little good, except to rid me of the bushes. Indeed, I once felt fearful that the fire would communicate to the peat below, and burn up the whole meadow.

Convenient to this meadow there is a hill composed of sandy loam. I carted on some of this, manured it, and sowed grass seed. This answered the purpose. The ground very soon became firm, the grass seed took, and the yield was altogether beyond my expectations. This plan I have pursued ever since, and it has now grown into a system with me. My whole method consists in this. I first ditch and drain the land, cut off the bushes, and if they are large, pull them up by the roots, and level it down, then spread on about 400 cart-loads of sandy loam upon an acre, and 20 cart-loads of compost manure, harrow it well, and (usually in the month of September,) sow half a bushel of herds-grass and a half a bushel of red top, harrow again, and roll it down smooth with a heavy roller. Should the wild grass make its appearance, as it sometimes will after five or six years, I turn it over after taking off the crop, give it a top-dressing of about 20 loads of compost manure to the acre, sow grass seed, harrow and roll it down as before. I have one piece which has been reclaimed 12 years. It has not been manured since it was first laid down. The wild grass has not yet made its appearance, but it still continues to bear as great a crop as ever.

This land has been reclaimed at odd jobs, when my men and teams could not do other work to advantage—some of it in foul weather, and much of it in the winter. Indeed I was obliged to do much of it in the winter when the meadows were frozen, on account of the mire. I verily believe that the first two crops have, in every instance, repaid the whole cost and expense of reclaiming.

I have now from 20 to 25 acres, which have thus been reclaimed, (not including some 8 or 10 acres of swail hay, partially reclaimed, as stated in my answer to question 11.) The success that I have had may be judged of by the value of the crops produced. Every year since this land has been reclaimed, whether wet or dry, it has produced on

an average not less than three tons of English hay to an acre, which brings the highest market price. In 1833, at the request of Mr Colman, the Agricultural Commissioner, I weighed the first crop of hay on one acre of this land, and it weighed 7610 lbs. About three acres of it during the present season I have no doubt produced five tons to the acre. It was mowed twice, and the second crop was so large that it was considerably lodged. One other fact may be stated. A few years ago I built a barn 30 feet by 40, and some of my neighbors laughed at me for it, and said "it is a good barn, but what are you going to fill it with?" That barn, as Mr. Allen has seen, together with one 40 by 80 feet, which I have since built, as well as my others, are now full, and I shall soon have to build more, or else stop reclaiming peat meadows. This land during the present season has produced from 75 to 80 tons of good English hay, and it certainly affords no little satisfaction to be able to obtain such crops from land which fifteen years ago produced nothing.

13. I have planted about 6 acres of corn during the present season. On 3 1-2 acres, the soil being very light, I spread from 20 to 25 loads of compost manure to the acre and harrowed it in. This produced about 30 bushels to the acre. On the two acres, which was better land, I put the same quantity of manure per acre, part spread and part in the hill. This produced at least 65 bushels of very handsome corn to the acre. On one half acre I raised 40 bushels of the handsomest corn that I ever saw. It was the Brown corn, which is the earliest and best corn that I have. The seed was not prepared.

14. I planted between 3 and 4 acres of potatoes in one field. I have others around the cornfields, but how many I am not able to tell. They were all planted in hills and manured in the hill. They were ploughed and hoed twice. I am not able to tell the quantity per acre, but I raised about 1500 bushels in all. The kinds were the Chenango, long red, St. Helena, Rohan, and some white. The long reds and Rohans were the most productive.

15. The other vegetables that I planted were 1-2 an acre of carrots, which produced 450 bushels.

1-4	'	sugar beets,	'	320	'
1-10	'	mangel wurtzel,	'	165	'
1	acre of	ruta bagas,	'	200	'

This same acre was planted with ruta bagas last year and produced 1132 bushels, which shows the utility of a rotation of crops, so far as this vegetable is concerned.

In addition to the above, I have of turnips which grew in the cornfields, 225 bushels, and 12 cart-loads of pumpkins, besides 22 bushels of onions and other garden vegetables.

These vegetables are mostly fed out to the cattle and swine.

16. I sowed three acres of barley, half an acre of tea wheat, and one acre of oats in the spring with grass seed. The quantity is not yet ascertained, as the grain has not yet been thrashed. One and one-third of an acre of buckwheat, which produced 30 bushels. Two-thirds of an acre of Indian wheat, which produced 21 bushels. I used no lime with any of it, except the tea wheat.

17. I have laid down 1 1-2 acres to grass, sowed about the first of June without grain. I put half a bushel of herds-grass seed and half a bushel of red top to an acre.

18. I make my manure from loam, peat mud and litter put into the hog sties and barn-yard. Part of my hog sties are situated under my barn, so that all the manure from the cattle and horses in the large barn is dropped into them. When taken from the sties it is mixed up with loam and peat mud in heaps, where it remains until wanted for use.

16. I keep 7 yoke of oxen, 13 cows, 4 young cattle, 4 horses, and no sheep. I winter 33 head of cattle, but in the summer part of them are sent into the country to pasture.

I have 4 barns; one 30 feet square, one 30 by 40 feet, one 30 by 70 feet, and one 40 by 80 feet, with a cellar under the whole of it. In this cellar are part of my pig sties and manure, which of course is covered.

20. My cows are mostly native, though some are a mixed breed.

21. I am not in the habit of raising calves.

22. I have made 600 lbs. of butter. From the first of November to the first of June I sell my milk. I make no cheese.

23. I keep no sheep.

24. I keep from 60 to 75 swine. I raise pigs to sell. I fatten about one ton of pork. My swine are nearly all a cross of the Berkshire and Mackey. I have one breeding sow of this breed, 7 years old, which has raised 111 pigs in 11 litters and is now just ready to pig again. One full blooded Mackey 4 years old, which has raised 8 litters of from 8 to 10 at a litter. My swine were originally obtained from E. Phinney, esq., of Lexington. I am now about erecting a piggery with boilers set, &c.

25. During the summer months, I feed my swine upon weeds, which are freely thrown into the pens, slop from the kitchen, skimmed milk, (particularly for the pigs,) boiled potatoes, apples, pumpkins, carrots and Indian meal, all boiled together, I use the same kind of food to fatten them, with the exception that it is thicker and contains a greater proportion of meal. I occasionally, particularly when I wish to have them root and work over the manure in their pens, throw them a few ears of corn.

26. From all my hog sties I take not less than 700 cart-loads of manure per year, part of which of course comes from the cattle and horses. The quantity of manure made on the place during the past year, was not less than 1200 cart-loads.

27. I employ sometimes only two and sometimes eight hands on my farm. I have paid during the past year \$750 for labor, but it was not all confined to farming—\$200 should be deducted for other work.

28. I have 150 young engrafted apple trees and 50 old ones partly engrafted, mostly with winter fruit. Some of my apples I boil up for the hogs.

29. I have 10 pear trees 6 quince, 6 cherry, 6 crab apple, 8 plum, 10 peach and 1000 young trees of various sorts in a nursery.

30. My trees for several years have not been troubled by canker worms, and not at all by borers.

31. I do not allow the use of ardent spirits on my farm, nor do I intend to hereafter, although I did last summer till the latter part of August.

The above statement is as accurate as I can make it, and I think it nearly correct.

All of which is respectfully submitted.

Oct. 26, 1840.

ABEL MOORE.

#### Wm. Salisbury's statement.

1. My farm consists of 130 acres, exclusive of woodland, and embraces loam, clay and some peat, or, as we call it, meadow.

To reclaim my meadow lands, I find it necessary to drain them, and invert the sod by the plough or some other implement, in such a manner as to completely kill out all the wild grass: when that is accomplished, I carry on a compost made of as fine loam as I can obtain—say from 12 to 25 loads to the acre. My meadows are generally so soft before I get them brought into grass, that I cannot go on to them with a team except there is frost in the ground. I therefore prepare my compost in summer or fall, and heap it up pretty well, so that I can take it when the meadow is sufficiently frozen, and carry and spread it on the meadow; and when the frost gets out 2 or 3 inches, I go on with a good pair of horses and sharp harrow, and harrow till I make the surface as smooth as I can get it. I then sow on oats or some other grain, and give another harrowing. I then sow on about one peck of herds-grass, half a bushel of red top, and as I commonly raise my own clover seed and sow it in the chaff, I do not know how much seed I put on; do not think we often hurt land by sowing clover seed on it. My upland I prefer to stock down in the fall, as I can then turn the stubble under, which I think is of service to the ground: I sowed two pieces on my meadow last spring; the one I harrowed after sowing the grass seed—the other I did not; and the piece that was not harrowed took the best. I sow southern clover seed on my land in the spring; the next season it will be ready to cut early, which I do, and lay it up for my milch cows. The second crop will usually start up very soon, and with me, as it will commonly fill with seed, I let as much of this crop stand till it gets ripe, as I think I shall want to sow the next spring. I do not think it good policy to sow clover seed in the fall as the frost would probably kill it out. On the lands I laid down this fall, I intend to sow clover chaff next spring. After cutting clover intended for seed, I let it lay on the ground about a week, to take the dew and rains, which will render it much more easily thrashed. I have been thus particular, thinking that the method of saving clover seed might not be understood by all my brother farmers in this section of the country.

I have tilled this season about 18 acres; I usually put on about 20 loads of manure to the acre, where I spread it, which I generally prefer to do. I usually mix meadow mud with all my stable manure: my straw manure I usually cover up in potato hills. I have usually carted my manure on to my grass land that I intended to plant to corn, and as I plough my land with what is commonly called a side-hill plough, and turn the furrows all one way, I have but one row of heaps spread at a time, preferring to cover it before it dries. The land that I intend to plant to potatoes I plough before I cart the manure on; then spread and harrow well, and cover the manure nearly all up when I plant.

There was so much said last year by a gentleman at the south, about its being the best way to put the manure on the top of the land, which has always been contrary to my theory, that I this

year caused three loads to be spread upon the top of the land and well harrowed in, and three loads ploughed under as usual, and staked the land out (equal quantities) and planted it to corn; the result this year is in favor of turning the manure under; but it remains to see which piece will produce the most grass and hold out longest; which it will take several years to determine:

I mow about 25 acres of upland. I think I cut from 1 to 1 1-2 tons per acre. I have no land that I can irrigate, except some low meadow, which I flow by means of dams that I cause to be made by ditching and laying the sods and mud above the ditch. I put down my gates in the fall before the swamps get full, and keep them down till April. The last year was the first of my experiment in this way. I therefore cannot so well tell what the result may be, but I think it will be favorable, as there appears to be considerable sediment settle. I do not manure the land that I irrigate. I put compost manure on meadow land that has been reclaimed, say from 12 to 20 loads per acre. I mow about 20 or 25 acres of low land that is not suitable for the plough; on that part which I have properly reclaimed I cut from 2 to 3 tons per acre of a good quality; on about 10 acres that I have not improved, I should think that I did not cut more than half a ton per acre; and that not worth half as much per ton as that which grew on the reclaimed meadow. (My method of reclaiming low bog is given in the previous part of my statement.)

I have planted 3 1-2 acres of corn this season. Some part of the ground was prepared by spreading manure on the grass and turning it under; on about one acre of which we also put a small quantity into the hill; on some we ploughed the land and spread manure on the top and harrowed it well. When I plough the manure under, I put about a gill of ashes round the corn after it is up: on the two pieces where I planted for experiment, I put ashes equally alike on both parts. I plant my corn without soaking. From 3 1-2 acres of corn we husked 300 bushels of ears, which we think will yield 150 bushels of shelled corn. The principal part of my corn this year was planted on low moist land. On one fourth of an acre of good corn land containing 680 hills, we spread 8 loads of stable manure and ploughed it in, and put about 3 loads in the hill: the corn was planted near the house and the fowls injured it some, but we husked 1368 pounds in the ear, which would be but a fraction short of 19 bushels, allowing 75 pounds to the bushel, on about one quarter of an acre.

We planted about 4 acres with potatoes, they are not all dug, and of course I am not able to state how much they will yield to the acre. My manner of planting I have heretofore in this report stated: I plant calico, orange, pink-eyes, lady-fingers, blues and long reds.

I planted this season to ruta бага, English turnips, cabbages and carrots, about 1 1-2 acre: they are not all gathered yet—of course I am not able to say how many bushels I shall have. I do not think I have made it profitable to raise turnips this year; my carrots look better. I also sowed nearly an acre of corn for the purpose of feeding to cows when the pasture grew short: I this year found it very convenient. I expect also to feed out my turnips and carrots principally to my milch cows.

I sowed about 14 acres of ground this season. I sowed rye, peas, rye and oats mixed together for feed for hogs; rye and oats also, and barley. The peas, rye and oats sowed very early: rye I also sowed the first part of April; the barley I did not sow till some time in May: I sowed about one bushel of rye to the acre; about two of peas, rye, and oats, and about two and a half of barley. I last fall ploughed up about 2 1-2 acres of grass land, that was too wet to hoe; I rolled the land down, and in the winter and spring I carried on from 15 to 20 loads of compost made by my hogs and spread it, and sowed on about two bushels per acre of peat, rye and oats mixed together, and harrowed it in and sowed on my grass seed, and it now bids fair to produce a crop of good hay another year: the land that I sowed my rye on I did not plough in the spring, as I did not wish to disturb the sod that was turned under last year; I went over it with the cultivator. The land that I sowed barley on I ploughed this spring. Did not raise wheat this year.

I have laid down 14 acres to grass this season, oh 8 of which I sowed the grass seed in the spring at the time of sowing the grain, and on 6 acres I sowed it by itself this fall about the first week in September, (quantity of seed stated before.)

My means for making manure are meadow mud, loam from the roadside, leaves, &c. Method of making manure: first my barns stand a little elevated; the yards form a gentle declivity. I have ploughed and taken out the earth near the lower side, also raised the lower part so that the hole would probably contain about 20 loads of muck or loam; I fill that with meadow mud or loam, as best suits my convenience; when taken out, which I do about twice a year, if filled with mud, carry it on to upland; if with loam, carry it on to the meadow. Below the yard I have excavated another hole, which I fill also; and when there is enough water to run out of the yard, I conduct it with spouts over any part of the place that I wish. I used to be in the habit of cleaning up my yard every morning and putting the droppings from the cows into a pile and throwing mud or loam over them; but have for two years past adopted a different method, which I think augments my manure very much; every morning, Sunday excepted, I throw about two shovelfuls of mud or loam over every dropping of a cow, and by this means I not only save the droppings, but also a great part of the urine. I have also dug under my stables and carried the dirt on to my meadow, and now fill under them with meadow mud; also lay as much mud as is convenient under the barn windows where I throw out my manure. I have also dug into the side-hill and placed my hog pen in such a way that my hogs lie almost under ground: have dug the yard down so as to make it level; laid a bank wall 6 or 8 feet high on the north side of my yard, and made a road round so that I can drive and tip as many loads of any thing that I wish into the yard as I please; I do not, however, at this season of the year put more than one or two into the same yard at a time. I also deposit back of the hog yards large quantities of mud, and as soon as it begins to thaw in the spring I begin to shovel into my hog yard and cover up the droppings of my hogs. I have also dug a hole a short distance from my house that will contain 12 or 15 loads of meadow muck, and with



spouts from my sink spout and back door, I conduct all the waste water and suds over the deposit.

I have kept this summer and through the last winter 4 oxen, 12 cows, 6 two years old, 9 yearlings, 2 horses, 1 colt, no sheep.

I have one barn 82 by 30, one 52 by 30 feet; one barn built by my predecessor, for sheep, which I have converted into a hay and stock barn, 60 by 20 feet: have no cellar under them, except as stated above; have a shed between two barns, under which I put meadow mud and throw the manure from two stables.

I have been for a considerable time trying to improve my breed of cattle by mixing English and French with the best natives I could get.

Those calves which I intend to raise I let suck two or three days and then take them off and learn them to drink. I have this year raised six calves, which I have pastured. I have also kept for my neighbors seven cows nearly all the season. We have this year milked two old cows, seven 3 years old, and one 2 years old that calved in July. My family are pretty numerous, and of course make use of considerable milk. We have made up to this date 465 lbs. of butter and 40 cheeses—a small proportion of them new milk; nearly all of them better than four-meal cheese.

I have kept no sheep for some years. I usually keep one breeding sow, and have her produce one litter of pigs, say in March or early in April, which I usually kill the next winter for my own use: she will commonly have another litter by August or September; these I keep over winter and fatten the next winter to sell. I killed ten last winter; the oldest weighed I think from 225 to 300; the shoats weighed from 200 to 225. I have also endeavored to improve my swine by mixing with the best breed that we can get in our section of the country. We have had in this neighborhood a boar from Mr. Phinney, of Lexington, so noted for keeping good hogs: the probability is if we had his corn chamber too, it would improve our pork very much. I have fenced off with boards about 2 1-2 acres of the thickest part of my orchard, and let my hogs have access to that from spring till about September, which I think helps the hogs and orchard too, very much: my hogs have been in but two or three years, and many of my apples have nearly doubled their size in that time, and are less wormy. My hogs, with the wash from the house, get their living in my orchards: in number six old ones and four pigs that came the first of March. After shutting them up I feed them with raw pumpkins and apples as long as these last; I then boil or steam potatoes a while; I then mix some provender with them; at last make a pudding of corn and peas, rye and oats ground together; also occasionally give them a little corn in the ear.

I make from 60 to 75 loads of manure per year: in the season for it, I cut what brakes I can find on my farm and cart into the hog yard; get turf and loam from beside my walls; and use meadow mud; I suppose I have now from 3 to 500 loads of meadow mud thrown out, ready to cart or sold, if I want it, all the coming season.

I have employed this season one man for four months, for which I paid \$12 50 per month; one

other youngster 18 years old, for 8 months, for which I paid \$10 per month; I also have a grandson about the same age that lives with me all the year, and a small boy 10 years old. I am not able myself to do hard work; do not mow, chop or shovel; but can put up the bars and spread hay.

Have about 400 apple trees, most of them grafted; my winter fruit goes to market, except what we want for family use. The ordinary apples are principally given to my hogs in a raw state, but are sometimes ground in my cider mill, when a little provender is put with them and they are suffered to ferment; which mixture the swine eat very greedily. The last year we made but about two barrels of cider, which more than supplied us for the year.

I have about 20 pear trees, as many peach trees, some plums, and some cherries.

My trees have not been attacked by canker worm. I think I have lost a few peach trees by the borer. I sometimes dig round my peach trees in the spring and put ashes about them.

We do not use ardent spirit at all as a drink on my farm.

In conclusion, the subscriber would say that he came on to the farm eleven years ago; found it very much run down; the pasture all run over to alders and bushes, some of them 6 or 8 feet high; the meadow very much run over with hassocks; from one half acre we took off 25 heaping cartloads. For several of the first years I could not raise my bread nor fodder enough to keep my cattle, summer or winter. I have now pretty much subdued the bushes; fenced off ten acres of the pasture; tore up the alders and bushes; manured the land and converted it into productive mowing fields; have eradicated the principal part of the hassocks on the farm, and reclaimed a considerable portion of my unproductive meadow, as your agent will see. I have had to work my passage, as the saying is, almost against wind and tide: I had to run in debt for a considerable part of the farm, and without means to buy much manure, I have had to make it principally from the materials which a wise Providence has so amply provided. On a farm so large as mine, I do not think it so much an object to raise a large crop on a small piece of land, as to make a large piece of land productive.

All which is respectfully submitted by your ob't. servant,

WM. SALISBURY.

Groton, Oct. 21st, 1840.

#### THE OYSTER TRADE.

From the Baltimore American.

The extent of the oyster trade in this city cannot be ascertained from any exact returns or estimates, since no account is kept of the quantities annually brought for sale to our market. But that it is a business of considerable importance, may be known from the large number of vessels employed in it, from the vast quantities sent every year to the west, and from the extent of the domestic consumption, which is perhaps greater here than in any other city in the union. Oysters are also sent in considerable quantities to Phila-

delphia and New York in a *legitimate* way; to say nothing of the cargoes which are carried off by marauders—interlopers from the north, who pounce down upon our testaceous settlements with drags and raking irons, contrary to the act of assembly in such cases made and provided.

The fine quality of the Chesapeake oyster is well known. Persons who have eaten no other oysters than such as are native to the Delaware bay, the Jersey coast, or the waters neighboring to New York, have no adequate idea of the true nature of this fish. We make no attempt to account philosophically for its superiority; the fact is enough. But there seems to be some peculiarity about the waters of the Chesapeake and its tributary streams—a peculiarity, whatever it may be, which epicures should hold in high veneration. Where else is the *canvass back* to be found? or the *soft crab* in its best estate? or the *terrapin*?

But to return to the oysters. The trade in this commodity between Baltimore and the west is carried on with great activity in the winter season. A species of vehicle has been constructed for this particular purpose well adapted for speed as well as for burden. Let it be on record that oysters, on their route to the west, have beaten the mail stages. We shall probably hear before long that terrapins have done the same.

With the opening of the rail-road to Cumberland the transportation of oysters westward will become a still more extensive business. There will always be a demand for them over the mountains—a demand that must ever outrun the supply. For the people of the west are not only people of taste, but there is also among them a traditional regard for the oyster—a sort of hereditary respect transmitted from the first settlers, who could not omit to place this fish first in the place of luxuries which they had left behind them when they bade adieu to tide water to take up their abode in the great interior where there were no oysters. Of course the fish was much talked of in domestic circles; his uncouth appearance so unlike that of other fish—perhaps the question was mooted whether he was a fish or not—and all this kind of speech to those of the rising generation who had never seen an oyster, together with the fervid description of his choice flavor, so superior to that of any other delicacy, could not but enhance the reputation of the animal to a most extraordinary degree.

In view of the probable increase of the trade in this article it becomes a matter of some importance to inquire into the best means of preserving the oysters in their native beds from undue destruction—also for increasing their quantity and keeping a constant supply. We notice in a Boston paper that much care is devoted to this end in some places along the North Atlantic coast. At Wellfleet, near the extremity of Cape Cod, there is considerable trade in oysters, although they are not native to that locality. The oysters are mostly obtained from Staten Island, Little Egg Harbor, and sometimes from the Chesapeake and Delaware bays. They are selected of small size and planted; and after some seven or nine months they are taken up and carried to market, having increased during that period to a size sufficiently large. About thirty vessels, averaging 40 tons each, are employed a portion of the year in this business. The time for planting is during the

months of March, April and May—but in this latitude it might be earlier.

If the farmers, country gentlemen, and others, living on our Chesapeake rivers and bay side would take a little trouble in this way, and plant out large beds of the best oysters, there is no doubt but they would find their account in it. During most of the year good oysters will bring in this market seventy-five cents a bushel—a better price than corn. The trouble of planting is very little—as nothing more is required than to drop the oyster on the bottom in any selected, convenient place. There is not a resident on the bay and its rivers that might not add handsomely to his income by taking a little pains in this—besides always having for his own use a ready supply of the choicest product of our waters.

#### POISONING WOLVES.

From the Union Agriculturist.

Walworth, W. T. July 24th, 1841.

Sir,—As this section of country was much infested with wolves during the winter of 1839, I gave to a neighbor who had lost a cow, a few grains of strychnine (made from the *strychnos calabrinum*,) instructing him to cut out small baits, and insert into each, under a flap cut very thin, 1-8 of a grain of the poison. The body of the cow was drawn to a convenient spot on the banks of our Lake, and the prepared baits dropped at different distances around the carcass. The stratagem resulted in the death of six wolves besides a number of foxes, raccoons and birds of prey. When these facts became known, I had many applications for the article; and so uniformly successful were these trials, that I can enumerate twenty-six wolves and one panther which have been destroyed by the strychnine, (only 60 grains,) which I furnished that winter. One farmer in this town had \$400 bounty for the wolves he killed with but one dollar's worth of the poison. In this case the flap was sowed down with *colored thread*, so that on opening the stomach he knew his own bait again; and was thereby enabled to take the necessary oaths for obtaining the bounty. It is a good practice, under all circumstances, to sew down the flap over the poison, lest the animal should taste and reject it; (it is exceedingly bitter;) but then the flap should be as thin as possible, that it may the sooner come in contact with the nerves of the stomach. Strychnine causes death solely by its action on the nerves, and therefore no traces of phlogistian, or even of cerebral congestion can be discovered on dissection.

Winter is the most convenient season for using this poison to advantage; not only on account of the bait being more easily obtained, and kept, and the animal more easily tracked to the spot where he finally falls, (this varies from one rod to one mile,) but also because the poison is more fatal in cold weather.

Strychnine may be made from any of the *strychnos* family of plants, but the best is made from the *St. Ignatius bean*, or the *Upas trente* of Java. That which is made from the *nuxvomica* is comparatively weak, requiring half a

grain to kill a wolf; but as it is more easily obtained, I will describe the method of extracting the strychnine from it.

Boil four pounds of the nut in two gallons of water as long as possible without burning; strain and evaporate to the consistence of molasses; add lime enough to saturate the acid, and set the strychnine free; dissolve this last in alcohol, and evaporate till the salt is crystallized. In this manner the poison may be obtained with very little cost, but such as consider this process rather troublesome, can send to some wholesale druggist where a tolerable article can be had for three dollars per drachm of 60 grains. It may be kept any length of time, and is not injured by exposure to the air.

I will now close, by stating my conviction, that should but 60 grains be purchased and properly used, by each town in Wisconsin and Illinois the ensuing winter, sheep might be pastured in the thickest woods, without risk, the following summer. J. MACNISH, M. D.

From the Southern Agriculturist.

**REPORT OF THE COMMITTEE OF THE BARNWELL AGRICULTURAL SOCIETY, ON THE CULTURE OF COTTON.**

Read at their annual meeting, on 11th November, 1840.

In reporting on the cultivation of cotton, the great difficulty with the committee, has been to determine what topics to exclude, so as to be as brief as is requisite for the occasion. To discuss, at large the different qualities of soil, best adapted to this plant—the various methods of preparing the land, and planting—the working, gathering, and preparing for market—the making and applying manures—the rotation of crops, raising stock, and management of negroes—all of which might be embraced, as intimately connected with the subject—would be more fatiguing than improving. The committee prefer to touch only here and there, upon these topics, and at the risk of appearing somewhat desultory and unconnected, will refrain from a full and systematic investigation.

It must be premised, that there are two very different plans of applying labor to the culture of cotton, both of which are followed successfully, as is supposed, in our district. These may be called the upper and lower country system, from the sections in which they originated, and are in general use. The one goes upon the principle of economizing labor, by applying animal power, and developing the full resources of the soil: and where provisions are easily made, and land abundant, it has been found to work well. The other dispenses, as much as possible, with animal power, economizes in provision, and husbands for a future generation the vigor of the soil—or aims to do it. Both include manuring, as much as can be done conveniently, but more is probably done by planters who adopt the latter. That more cotton is made by the up country plan, experience has demonstrated beyond question, in both sections: whether it is made more cheaply, and (what is most important,) brings more clear money to the pocket of the planter, depends so much upon the particular circumstances of each individual

proprietor—the character and extent of his land—the adaptation of the climate to provision crops—the number and training of his laborers—and his own tastes and habits, that it is almost impossible for any general rule to be laid down. One of your committee has used and discontinued the lower-country system, the other has done the same with the up-country one. Perhaps it is worth the while of every individual, to make the same experiment once in his life, and we recommend it particularly to all, who are unsuccessful under their present system, whichever it may be.

Your committee agree, that with any kind of culture the mulatto pine-land, (as it is commonly called,) with a clay bottom, is the best in our section of country, for cotton, or perhaps any thing else. The Indians, even, seemed to have agreed on this; for most of the Indian old fields, are of this kind of land. It has been lately analyzed by Professor Shepard, at the request of the Agricultural Society of St. John's, Colleton, and found to contain a large comparative proportion of carbonate of lime from which, no doubt, its fertility in a great measure results. The clay bottom to this, and all other land, is certainly an advantage, as it assists in preserving the salts of manure, and to keep up, in ordinary seasons, a due degree of moisture. In very wet ones, such as this, however, it retains too much for the light soil above, and in very dry ones, such as the last, it seems to arrest the moisture which might otherwise arise from the depths of the earth. This land and any land, is better for cotton, when a little undulating. The sun, the great chemical agent in vegetation, has then more effect on it.

*The ground cannot be too well prepared for cotton.* If it has rested one year, it should be broken flush, as early in the previous fall as possible, and bedded just before planting. If it has rested two years, or been planted the preceding year, let it be listed, as early as it can be done, and two furrows thrown upon the list. Immediately upon planting let two more furrows be thrown up, and the balk broken out completely. The common method of running three furrows, and planting on it, throws the winter's portion of the crop-work upon the laborer, during crop time, and is inexcusable, unless heavy clearings are absolutely required. The reason for not listing after one year's rest is, that the vegetable matter will be too abundant, and too coarse to form a substratum to receive the tap-root.

*Cotton should be planted early.* It may increase the difficulty of getting a stand, and give the plant for a long time, a puny appearance, but every stalk of cotton, planted in March, or the first week in April, that survives, may be readily distinguished, in any field: that has been replanted later. It bears more, and earlier, and stands all the vicissitudes of June, July, and August, better. There are several methods of planting. Your committee recommend planting in spots, regularly measured by the hand dibble. It is somewhat tedious, though less so than generally supposed, and certainly does not take as much time as both to drill and chop out; nor is time so valuable at that period, as when the latter operation is required, while a better and more regular stands may be secured. There is no land, or but little in our district, in which cotton rows should be over three feet apart, or the cotton further than fourteen in-

ches in the drill—one plant in a place. To make a large crop, there must be an abundant supply of stalks. When the weather is too wet to plant, time may be often saved, by dropping the seed, but not covering until the ground is drier. If, however, it cannot be covered in three or four days, it is time lost, for it must be replanted. Always cover lightly, under any circumstances. And always plant on something of a bed, in any land. It keeps the cotton drier and affords more air when it is young. It enables you to get at it in working. By increasing the surface, it absorbs more moisture, if it is too dry; and gives out more if it is too wet, and in both cases gives you the advantages of a vertical sun, on the tap-root, which hastens the maturity of the bolls—a vast desideratum in our climate. On this account the bed can hardly be drawn too high at the last hoeing, in any season.

*In cultivating cotton*, whether with the plough or hoe the chief object is to keep down the grass, which is its greatest antagonist, bringing all, or almost all other evils in its train. It is not so essential in the opinion of your committee, to keep the ground stirred, as is generally supposed, and by no means requisite to stir it deep—at all events not in our light soil. If it be well prepared, deep ploughing is not only unnecessary for any of our crops, but often highly injurious to them, while it rapidly exhausts the land, by turning it up fresh, under a burning sun. Much unnecessary pains is usually taken, and time lost, to work the plant in a particular way, under the supposition that it is a peculiarly delicate one. If it survives its infancy, few plants are hardier. It is often found to reach maturity in the alleys, where the mules walk, with the ploughs following and the laborer tramps backwards and forwards. Sometimes it will bear fruit in turn-rows used frequently for wagons, while it really seems to derive benefit from being bitten down almost to the ground by animals—it will bear almost any usage, better than it will that mortal enemy—grass.

The most critical operation in working cotton is *thinning*. It should be done with great care, and if early, with the hand. In a dry year, it cannot be done too soon after the plant is up. In a wet one, it may be profitably delayed, until it has begun to form, or later even. On the experience, observation, and judgment of the planter, in this matter, every thing depends, as each year brings its own rules with it. Where circumstances are favorable, early thinning is of course the best. Some planters always top their cotton. Others never do. Your committee are of opinion, that it seldom or never does harm, to do so. But whether it is worth the trouble, is a doubtful question. Those who have no clearings, or other important employment for their hands, would lose nothing, by devoting three or four days to this operation early in August. Those pressed for time, might gain by omitting it.

*Too much pains cannot be taken in preparing cotton for market*, for they are all well remunerated by the additional price. The first thing to be attended to is to have it gathered free of trash. With a little care, wonders can be effected in this way; and hands with a short training, will pick almost if not quite as much without trash as with it. It should never be gathered when wet. And here it may not be out of place to remark, that one

of the very best sanatory rules of a plantation is, never before frost to send out your hands to pick, until the dew has nearly or quite disappeared. It saves time in the long run, as well as health and life. Cotton should never be ginned, until the seed are so dry, as to crack between the teeth. If damp, it is preferable to dry it in the shade, as the sun extracts the oil and injures the staple. If by accident, however, it gets wet, there is no alternative but to put it on the scaffold. It is of great importance to sort the cotton carefully, into its several qualities, in ginning and packing, for by mixing all kinds together, the average of the price is certainly lowered. A few old hands, or very young ones, breeding women, sucklers, and invalids, will earn excellent wages in a gin house, at this occupation. Neat packing is of no small importance, in the sale of cotton, and no little taste may be displayed, in making the packages. The advantage of square bags, is universally known, and the committee are astonished that any other should ever be made now.

*Every kind of manure is valuable for cotton.* Every kind of compost, green crops turned in, cotton seed, and even naked leaves lied, and left to rot, improves this crop. When planted on cotton seed, and sometimes on strong stable manure, it is more difficult to retain a stand, owing probably to the overstimulus of these manures. So, on leaves, unless well rotted, the cotton will long continue to die, in consequence of the leaves decaying away and exposing the root too much to the sun and rain. These difficulties may be avoided, by a little pains, and by no means justify the opinion entertained by some, that cotton should never be planted on fresh manured land. The only question is, the cost of the manure. A great deal may be made on every plantation, without much trouble or expense, by keeping the stables and stable-yard, hog and cow pens, well supplied with leaves and straw. And also from pens of corn-cobs, sweepings from negro and fowl-house yard, and the rank weeds that spring up about them, collected together and left to rot. Whenever the business is carried further, and a regular force detached, to make manure, at all seasons, and entirely left out from the crop, it becomes the owner to enter into a close calculation of the cost and profits. In many agricultural operations, such a course, the experience of all countries has proved to be profitable, but these operations partake more of the farming and gardening, than planting character, and whether the same method will do for the extensive planting of short staple cotton, remains, in the opinion of your committee, yet to be tested. If any thing like an average of past prices can be maintained, it is certain that more can be made by planting largely, than by making manure as a crop. If, however, prices continue to fall, and the growing of cotton be confined to a few rich spots—those susceptible of high manuring—then our whole system must be changed, our crops must be curtailed, and staple-labor losing its past value, the comparative profit of a cotton and manure crop will preponderate in favor of the latter. As a substitute for manuring on a large scale, resting and rotation of crops is resorted to. In our light level land, the practice of resting cannot be too highly recommended, and by a judicious course—such as resting two, and planting two, or at most three years, our lands may not on-

ly be kept up for ever, but absolutely improved. From rotation of crops but little advantage is gained for cotton. After small grain, whether from the exhausting nature of that crop, on light lands, or because the stubble keeps the ground always rough and porous, cotton will not do well. After corn it is difficult to tend, as from our usual manner of cultivating corn, grass is always left in full possession of the field. It does best after cotton, or after a two years' rest. Rest is the grand restorer, and the rotation chiefly required in the cultivation of cotton.

It may not be out of place to state here, that in the opinion of your committee no other kind of labor can be profitably employed in the culture of cotton, than *slave labor* in this country. The expense of machinery and carrying to market, renders it unprofitable, with but one or two laborers, which are all that one free family, can in general supply, while it is almost impossible, to carry on the steady and unvaried operations of a cotton plantation, with such hirelings as can be obtained here. An irresistible necessity must fix them in the occupation. Whether that necessity be the open and legalized slavery of this country, or the equally imperative exigency which forces the Irish peasant, and the Indian ryot, to labor without ceasing, as the sole condition of existence, makes but little difference. It is said that free labor, by which, no doubt, is meant such labor as this latter, is the cheapest. It would seem, indeed, where the labor of an able-bodied man can be commanded at any moment, for a pittance that barely suffices to keep soul and body together, that it would cost less than to support the same man in sickness as well as health, in good or bad seasons, to nurture him when young, to support him when old, and at all times to furnish him with good food, comfortable raiment, and safe medical assistance, and to do likewise for the feeble and decrepid of his family. It is undoubtedly the case, so far as the agriculturist, only, is concerned. But what is done by him for his negro slaves, must be done to some extent by the community at large, for the equally helpless free laborer. Poor laws and almsgiving shift from the agricultural to the other classes, the burden of keeping him alive, and supporting his family, when his services are not needed, or he is unable to render them, and it is only inasmuch as he is worse lodged, clothed, and fed, than the negro slave, or is cut off by starvation or disease, before he has ceased to be able to work, that the cost of his labor, is in reality less than that of the slave, to the community at large. Let the philanthropists of other countries, enjoy the advantages of such economy as this, and thank God that they are not as other men. We are content to follow the example of the ancient patriarchs—to uphold the institutions regulated by the inspired lawgiver of the old, and neither abolished nor condemned, by the immaculate Author of the New Testament; well pleased to pay a higher price for our labor, if it goes to prolong the life, or increase the comforts of that invaluable class, which has existed, and is destined to exist in all times and countries, whose lot it is, literally, "to earn their bread by the sweat of their brow."

Your committee cannot conclude these desultory and incomplete remarks, without adding, that with every care and attention, in the cultivation of cotton, after the adoption of every im-

provement, and using the utmost economy in every arrangement, there is no planter in our section, if there be any in the state, who can make the legal interest of 7 per cent. per annum, on his investments, by planting cotton, at present prices. There are very few of them, on our best lands, who can realize this much, at 10 cents per lb. net, and not many who can do it at 12 cents. If prices do not improve, most of us will become compelled to abandon cotton. If they fall lower, it will be difficult to say who can plant, in this section, at least. A very few years more, will decide our fate. It will be the part of wisdom to go on, and endeavor to perfect the art of planting, that we may be able, if it is possible, to compete with richer soils, and more congenial climates; but it would be folly, if we did not, at the same time, look around us to see what our country is capable of yielding, and encourage liberally every effort to develop our resources, diversify our productions, and introduce new staples.

J. H. HAMMOND, *Chairman.*

#### GUNNY BAGS AGAINST KENTUCKY BAGGING.—

From the Natchez Free Trader.

We noticed on Saturday last, the arrival at New Orleans, of a vessel direct from Calcutta, with bags enough to cover 300,000 bales of cotton. The gunny bag is a strong fabric, of which large quantities are manufactured in the East Indies, where labor is very cheap. Large quantities of them are carried to Calcutta, from as far back in the interior as Thibet. The new demand which has sprung up for them in the United States, growing out of the high duty laid on foreign bagging, for the protection of Kentucky hemp, will give a great impetus to the East India manufacture, and we may reasonably expect hereafter to get a full supply of, perhaps, an improved article, unless the tariff party in congress should seek still farther to oppress the cotton planters, by laying a duty on gunny bags. These bags, as the name implies, come here in the shape of *sacks*, to avoid the duty laid on roll bagging, and they are easily cut and sewed, so as to make a neat and substantial envelope for a bale, capable, we believe, of resisting the boat-hooks, quite as well as the ordinary hemp bagging. They are decidedly cheaper. Let us suppose five gunny bags to a bale, (each bag holding about 2½ bushels,) at 12 cents each, would be 60 cents per bale.

Kentucky bagging, at 30 cents, 6 yards to the bale, would be \$1.80 per bale; being a difference of \$.120 per bale.

Now, if the planter is so situated, as to be able to adopt Mr. *Joseph Dunbar's* recommendation, to substitute *hoop-iron* for rope, there would be a still greater saving. This iron can be had at 7 cents; rope costs 12½ cents. Allowing eight pounds to the bale, there would be a difference in favor of iron hoops, to say nothing of neatness and durability, of 44 cents per bale. So that, according to this calculation, if we substitute gunny bags for hemp, and hoop-iron for rope, there will be a saving to the planter, of \$.164 per bale—a sum more than sufficient to cover the expenses on a shipment of cotton to New Orleans, and its sale in that market.

We understand also that a northern manufacturer has contracted to deliver in this city, for sundry gentlemen, a heavy article of cotton bagging made of our own raw material, at 23 cents. Hemp bagging is now, we believe, about 23 cents. Here then is a cheaper article, equally substantial, offered to the planter, made of the inferior cotton, grown perhaps on his own farm. It is cheaper than hemp; but even if sold at the same rates or a cent higher, it would be wise in the planter to purchase it; and thus increase the consumption of our own products.

#### MR. LAW'S ESTABLISHMENT.

From the American Farmer.

Having, unfortunately, more leisure upon our hands than is either profitable or pleasant, we visited, a few days since, the stock establishment of Mr. Geo. Law, and were highly gratified at the admirable economy of his arrangements, as well as with such of his stock as we saw. As most of his blooded cattle have been removed to the estates of several of his friends, we only saw ten of his Devons and one Durham, the former he is about shipping to the south, where from their fine qualities we are sure they will find favor, the latter is a good animal imported for his own use.

Of hogs, we had the pleasure of witnessing such an exhibition of *sorts and sizes*, as would have satisfied any *hog-ologist* in the country. There may be seen the improved *Ulster Irish grazier*, the *white Berkshire*, the *black Berkshire* and the *Woburn* or *Bedfords*, each in their purity, and of different families. Of these several breeds let us speak more in detail.

First. The imported *Ulster Irish grazier*. Of these Mr. L. has 4 boars and 10 sows, which were imported by him through confidential agents from Ireland. His agents were not limited as to price, but instructed to get the best, and to take particular care in selecting them from different families, so as to preclude the necessity of breeding in and in. These hogs are either black, or black and white, sometimes being spotted and at others listed, the hair thin and somewhat fine, the body is of great length and barrel formed, the middling of immense depth; hams well shaped, expansive chest, well turned shoulders, ears large and projecting over the eyes, neck and head of proportionate dimensions, legs such as may be supposed to belong to animals of such huge magnitude, calculated alike for the support of their ponderous bodies and for the facility of travel.

We have said that Mr. Law's agents in Ireland were unrestricted as to price, and in corroboration of that assertion, we will mention the fact, that for a boar and a sow Mr. L. paid £100 sterling. But these two animals are of great size, and we are certain, if thoroughly fattened, would weigh 1000 lbs. each. The boar some time since weighed, when in thin condition, upwards of 700 lbs. The sow is fully as large as her consort. She has at present a litter of fine pigs, and as she laid down to offer the aliment of her pups to her offspring, we could but remark the elephantine resemblance which her recumbent position presented.

Among Mr. Law's importation of improved Irish graziers, there is a young sow about 12 months old, whose mother weighed 900 lbs. She is a beautiful animal, and promises to do no discredit to her lineage.

The reader may suppose that this variety of the hog, from the immense size, is hard to keep, and requires large quantities of nourishing food; but we were assured by Mr. Law that such is not the fact, and in corroboration of his assertion, he showed us a pen, in which there were about thirty Berkshires, Irish graziers and Woburns, whose only feed, since the first of June last, has been the offal of the garden, all of which were in good condition. With the easy keep of the Berkshires and their disposition to take on fat most persons are familiar, and we do not disparage the merits of this popular breed, nor do we do more than justice to the Irish graziers and Woburns when we say, that on the meager fare, described above, they have done full as well as their companions, and would lose nothing by a comparison of condition with them, thrifty and kind as they are known to be.

As we looked at the Irish graziers and the black Berkshires, side by side, it struck us very forcibly that they would make an admirable cross: that while the Berkshires would curtail the size of the ear, length of legs, and coarseness of the Irish grazier, the latter would impart size to the former, without materially interfering with the beautiful symmetry of form and accuracy of proportions of the latter. But of the correctness of this opinion let those who may visit Mr. Law's establishment judge for themselves.

Secondly. The *white Berkshire* is a round, compact-bodied hog, with sufficient length of side to give sightliness to his figure: he is easily kept, comes early to maturity, and will weigh, if well kept, 200 lbs. at nine months old; his hams, middlings and shoulders are of fine form and size, legs short, ears pricked, bearing strong resemblance to those of its sable namesake, and is just such a hog as the farmer should have, who dislikes trouble in the procurement of food for his swine; for unless we are egregiously mistaken in our estimate of his qualities, he would puzzle even such an owner to keep him poor, and would come to the slaughter at a year old, if only allowed the privilege of a range in a clover field, from 2 to 300 pounds in weight. Of the *white Berkshires*, Mr. Law imported seven, 2 boars and 5 sows.

Thirdly. The *black Berkshires*, as you all know, are the crack hogs of the day, and as their excellence for luscious hams, shoulders and middlings, has been so often sung, we are loath to enter on a theme so worn-out and thread-bare, as to be like that of a fourth of July oration, which has long since set its face against novelty and defied genius itself, to embody a new thought. They are of docile disposition, and such is their indomitable propensity for taking on fat, that it is impossible to repress it even by stinted fare and unkind treatment. They arrive at early maturity, and if well kept will weigh from three to four hundred pounds at 18 months old.

Fourthly. The *Woburns* or *Bedfords* vary in their color, some being nearly white, with small blue or black spots interspersed over back and sides—others black and white spotted, or black

and white listed, while others are mostly white with large bluish spots on them. Of these Mr. Law has several boars and breeding sows, selected from Maine and Pennsylvania from different litters and families. Those from Maine were bred by Mr. Hayne, a gentleman of great celebrity for his Woburns, and as much may be said of the Pennsylvania breeder. Pigs of this variety have been made to weigh at 7½ months old, 238½ lbs. This fact is sustained on the authority of the Hon. Levi Lincoln, formerly governor of Massachusetts. In speaking of this breed that gentleman says: "The expense of keeping and fattening these pigs, I am satisfied, was less than with any other breed I ever raised, and the proportion of bone and offal to the valuable parts, was surprisingly small." We will not attempt a minute description of the Woburns, and shall content ourselves with observing that they are finely formed, evidencing great capacity for size, fat, and travel. That they arrive at early maturity is attested by experience, and that they will give good weight at a very early age is proven by the trial of Gov. Lincoln, alluded to above. One of these sows which I saw at Mr. Law's, a white and blue one, is the most perfect specimen of pig-beauty we have ever seen.

Mr. Law has two piggeries, one nearly adjoining his tasteful residence on Hollins street, the other half a mile farther west. The first though small is judiciously arranged and neatly kept; but why need we tell this, as those who know its owner, know that neatness and order must be preserved within the limits of his domains. His second is on a much larger scale; the little farm on which it is situated contains 18 acres of land, which is in part appropriated to the culture of roots for the sustenance of his stock.

Some months since, Mr. Law imported from Ireland, three improved Durham short-horn cows, the which being on the estate of a friend at some distance, we did not see; but from representation, we learn, that they are very superior animals, combining goodness of points and handling with immense size.

As Mr. Law's location in the city, and business engagements, do not allow him those facilities for breeding of cattle essential to success, he would dispose of this importation at fair prices. To gentlemen who may desire to possess themselves of genuine and superior animals, without the hazards of a transatlantic voyage, the present opportunity of being gratified, is one of rare occurrence, and should be promptly embraced.

Mr. Law has in his two piggeries about a hundred of the several breeds, which he will sell at \$20 a pair at 3 months old, and \$1 for the pen-feed to be provided at the cost of the purchaser. Persons disposed to purchase from this establishment can have their orders promptly filled by forwarding their money to the publisher of the *American Farmer*. Also for the Durham cattle.

#### BLACKBERRY JAM.

From the Southern Agriculturist.

Though a common, wild, and generally despised fruit, the blackberry makes an excellent jam, the use of which is found very serviceable in dis-

orders of the kidneys and bladder, besides being a very agreeable sweetmeat. Put into a stone jar a quantity of blackberries not ripe, but of full size and of a rich red color. Cover the jar and place it in a kettle of water. Set this over the fire, and make it boil. Let it so boil during six hours, supplying the water in the kettle lost by evaporation. At the expiration of that time, take it off the fire, put it into a preserving-pan, and to every pint of the mashed fruit, add a pint of water, and two pounds of lump sugar, clarified together as before directed. Set it on the fire, and stir it about until of a proper consistence. Then put it into pots in the usual manner.

#### ARRANGEMENTS OF FLOWER-BEDS, ACCORDING TO M. CHEVREUL'S ESSAY ON COLORS.

From the Gardener's Chronicle.

M. Chevreul has demonstrated, in an ingenious essay upon the subject, that the contrast of colors is of the greatest consequence, whether for good or for evil; and that, if to dress a brunette in sky-blue makes her sallow, or a blanch in orange makes her ghastly, or a fresh-colored girl in white makes her red, so, to place discordant colors near each other, produces just as disagreeable effects, though not quite so personal, in a bed of flowers. We shall not, just now, fatigue our readers with the philosophy of this matter, for which we refer them to Carson, and other divinities of the toilet: it will be sufficient to point out what the gardening results are to which M. Chevreul's inquiries have led. He says, that what are called complimentary colors, always suit each other. Now the complimentary color of red is green; of orange, sky blue; of yellow, violet; of indigo, orange yellow; and, consequently, blue and orange colored flowers, yellows and violets, may be placed together, while red and rose colored flowers harmonize with their own green leaves. White suits blues and oranges, and, better still, reds and roses; but it tarnishes yellows and violets. In all cases, however, where colors do not agree, the placing white between them restores the effect. The following combinations are also said to be good,—orange yellow with pale blue, greenish yellow with deep rose, deep red with deep blue, and orange with violet; white suiting all these combinations more or less. On the contrary, we should always separate rose from scarlet or orange, orange from orange yellow, yellow from yellow green, blue from violet blue; and even red from orange, rose from violet, and blue from violet. Applying these conclusions to the dahlia, which is now about to be planted out, the following arrangement of colors is recommended. In lines, the following succession, viz., white, reddish scarlet, white, rose lilac, yellow, violet or purple, orange, white, reddish scarlet, purple tinged with green, rose lilac, yellow, violet or purple, orange, white, red scarlet, deep purple, rose lilac, white, yellow, violet or purple, orange, white, &c.

To produce the best effect in patches of seven arranged together thus,—

O     O  
O   O   O   we may have  
O     O

1, six orange, with a purple or violet centre; 2,

six purple or violet, with a yellow centre; 3, six yellow, with a purple or violet centre; 4, six scarlets, with a white centre; 5, six white, with a scarlet centre; 6, six rose, with a white centre; 7, six blackish green purple, with an orange centre. These seven patches forming a straight border, may be then repeated in an inverted order, which would give thirteen patches, and there should be a patch of seven whites at each end. If the border is circular, without any central point of view, the foregoing arrangement should be repeated ad infinitum, without inverting the order after the seventh patch.

Another advantageous disposition would be the following;—

White.	Pink.	White.	Orange.	Violet.	Yel.
O	O	O	O	O	O
Pink.	Yel.	Whi.	Or.	Vio.	Whi.
O	O	O	O	O	O
White.	Rose.	White.	Orange.	Violet.	Yel.
O	O	O	O	O	O
Scarlet.	White.	Bl. purple.	White.		
O	O	O	O		
White.	Yellow.	Scarlet.	White.	Pink.	Bl. purp.
O	O	O	O	O	O
Scarlet.	White.	Bl. purple.	White.		
O	O	O	O		

In this arrangement, violet may be substituted for purple. These are points that richly deserve the consideration of those who are now about to plant out beds of verbenas, pelargoniums, and other tender annuals, for they will be found to affect essentially the display of agreeable colors. It may be difficult to apply them at first, but the attempt should be made at once, and such notes prepared during the flowering season, as will enable the principles to be carried out another year. In dressing and adjusting the stands of flowers in a florist's exhibition, the harmonious contrast of color can always be kept in view, and the importance of attending to the effect of complimentary colors observed advantageously. The ground color of such stands should be most especially consulted; and it should be remembered, that the nearer colors are brought together, the more decided is their mutual effect.

#### THE DAHLIA.

From the Gardener's Chronicle.

The dahlia is subject to vary so much in different situations and seasons, that great difficulty exists in gaining an accurate knowledge of the merits of each kind, especially of those which have been only seen for one season. The circumstances under which it is grown are also so various, that unless you see the plant, you cannot fairly judge the merits of the flower. A great deal of attention is requisite, in order if possible to find out what particular culture a given plant has been subjected to; for example, whether the shoots have been much thinned, the flowers shaded, a great deal of manure given, or none at all, &c. All these circumstances should be inquired into, or how can we expect to get fine flowers from new kinds? The following facts with regard to new kinds of dahlias, should always be borne in mind before condemning them the second year:—

1. That the seedling plant is much debilitated by propagation, and therefore the flowers are rarely as good the second season as they are the first and third. This circumstance alone accounts in a great measure for the dissatisfaction expressed of late years concerning the merits of new dahlias.

2. That the best flowers are obtained from those plants struck from the first cuttings produced by the mother plant, notwithstanding that they are seldom as strong as the cuttings that are afterwards produced.

3. That exciting the roots by means of a strong heat early in the spring, and striking the young plants on a strong dung-bed, tend to weaken the plants so treated to such a degree, that they frequently require two or three seasons to recover, and regain their original character. Thus it is found that good flowers are obtained with the least trouble from those plants kept in pots the first season after striking, (termed by the trade pot-roots,) planted out the following season, and allowed to start of their own accord.

4. That in wet seasons manure is frequently very injurious, from its causing the plant to grow too luxuriantly, and thus to produce but few flowers; while in very dry seasons, it is equally beneficial. Much more depends on a change of soil, than on its composition and quality; with moderate attention, good flowers may even be obtained from plants growing in brick rubbish.

5. That water is a point which cannot be too much attended to; a great difference exists between hard and soft water; but still more depends on the manner in which it is applied; for one or two good waterings are much better than a small quantity given three or four times a week, which is but too common a practice among amateurs; and,

6. That taking up the roots immediately after a frost has destroyed the top, is the principal cause of so many roots dying during the winter season.

We recommend the young dahlia grower always to remember these facts, which may not only be taken as rules for judging new dahlias by, but may also save him the vexation and disappointment consequent on the production of bad flowers from new and expensive sorts of dahlias.

#### APPLE GATHERING AND KEEPING.

From the Worcester (Eng.) Journal.

We have long been of opinion that a great error is committed by persons in general in gathering their apples for winter store before the fruit is sufficiently matured; also that it is unwise to make a general gathering, instead of effecting the operation by degrees and in detail, according to the kind of apple, whether more or less hardy, of an early or late sort, a short or long keeper, &c. In other harvestings judgment is exercised; one species of pea ripens later than another and is left longer to mature; one variety of wheat is garnered before another is ready for the sickle; one sort of potato retains its haum green to a later period than another, and is allowed to remain longer in the ground, and without doubt wisdom and experience dictate the operation! But in an orchard of winter apples, no matter how many sorts form the store, how various their kinds, or



what state of maturity the fruit, all are taken from the trees, although from some the leaves are falling fast, and on others they should not be off till the middle of December. We can adduce better authority however than mere opinion; we have results of our own experience to vouch for the correctness of these remarks. During the early part of the winter of 1839, that is, in the month of December, after the trees had been laid bare of their leaves, a peck or two of apples of a keeping sort were discovered, which had undesignedly been overlooked; they were gathered, and in fine condition, the bulk of the crop having been housed five or six weeks, and undergone the processes of heating and "sweating," which are supposed to be essential preliminaries to their safe keeping. Those off the same tree were yellow, looked shrunk and shrivelled, and in flavor had become, by comparison, rank and coarse; while, to our surprise, those of the newly-culled portion of the crop were sound, hard, firm, full, juicy, not mellow, and with all that freshness of flavor and texture which is never to be found in an apple that is not recently plucked. We regretted then that for so many years we had followed in the wake of others, and had not exercised a little judgment and discrimination, since it was evident that to suffer them to hang longer would be an advantage hitherto unimagined. Having purchased our experience, we have this season retained every kind of apple and pear (though contrary to the received opinion respecting the propriety of early culling this latter fruit) nearly a month later upon the trees, in many cases until the leaves had entirely left them; and we have found the results to be such as we anticipated. Every species is in better condition than we have ever known. Every scheme for keeping apples we have made trial of for many years, and put ourselves to an infinity of trouble in order to ascertain the best; we have "shelved" them; buried them in the earth like potatoes; laid layers in sheets alternately of apples and straw; spread them on the floor of a loft separated from one another, with an unglazed window, which admitted freely the "winter's flaw;" tried that of covering them up in bran; also in fine dried whitesand; warmth in closets; cellar temperature; total darkness; leaving them in heaps to sweat; storing them immediately from the trees; wiping and looking over and removing all those which were specked every week, packing in barrels with a linen covering over them, to abide the alternations of frost and thaw, as is the practice in America, and after all have arrived at this conclusion—that very little trouble is requisite, if caution is exercised in gathering them that they may not be bruised; they should then be laid in heaps for a few days in an airy spot, a barn floor for example, and afterwards packed in chests, barrels, &c.; and if care be taken to look them carefully over at the time of storing, no other attention will be requisite, excepting that once or twice more in the course of the winter and spring the same attention should be repeated; of course they must be kept secure from frost, and no English lincloth will suffice for this desirable end.

To those persons who may intend to purchase young trees of the most useful kinds, and who may not have "Lindley's Orchard," or other

book to consult, and who are so unfortunate as to possess no opinion of weight on which to rely, and are therefore compelled to trust to the recommendation of a nursery-man, it may not be unacceptable to meet with a few names of apples suitable for all seasons, of which we can speak from experience in unqualified praise. First, that delicious apple, the Hawthornden. The next that ripens and is fit for all purposes is the Keswick codlin. Then follow Caraway russet, golden pippin, Downton pippin, a lovely little fruit, of a shape and color unequalled, keeping until January, and although not so full a yellow, far more mellow; Newtork beaufin, (Biffin,) fine, firm, juicy, and large, fit for all purposes, of a very deep red purple hue, and celebrated for a local purpose, though meriting general culture; nonpareil, Downton nonpareil, Downton russet, small, and delightful when baked in the months of March and April; Winter pearmain; Scarlet pearmain; golden Hervey, Downton gilliflower, Ribston pippin, French crab. Here are fifteen kinds, quite sufficient in number and various in qualities for any private gardens, and certainly of the highest merit. Those with Downton attached to their appellation have been raised by Mr. Knight, president of the Horticultural Society, and sent by him to us. We therefore can attest the excellence of those which we have named.

#### AN EXCELLENT REGULATION—PRESERVATION OF BIRDS.

From the Albany Cultivator.

A friend has forwarded us a law passed at the last session of the Pennsylvania legislature, providing for the safety of certain kinds of birds during the early part of the season, or while they are most serviceable to the farmer, to take effect in the county of Chester, and parts of the counties of York, Lehigh, Delaware and Montgomery. The act declares it to be unlawful for "any person to shoot, kill or destroy, during the months of April, May, June, July, and the first ten days of August inclusive, in each and every year, any robin, flicker, bluebird, woodpecker, thrush or other insectivorous bird, other than blackbirds, under a penalty of two dollars for each and every offence." The act does not prevent any person from killing such birds as are found attacking newly planted grain crops; and it is to be hoped it will prevent that indiscriminate and wicked slaughter of these useful little birds, that are our most effectual aids in destroying the multitude of insects that destroy the fruit and the crops of the farmer.

#### APPLE JAM.

From the Southern Agriculturist.

The apples, which should be ripe, and of the best eating sort, being pared and quartered as for making apple jelly, are put into a pan with just water to cover them, and boiled until they can be reduced to a mush. Then for each pound of the pared apples, a pound of sifted sugar is added, being sprinkled over the boiling mixture. Agitate it

well, until reduced to a jam. Then put it into pots.

The above is the most simple way of making it; but to have it of the best possible clearness, make a thick syrup with three pounds of sugar to each pint of water, and clarify it with an egg, as before directed. Then add one pint of this syrup for every three pounds of apples, and boil the jam to a proper thickness.

#### NEW UTENSIL FOR CUTTING DOWN CORN.

To the Editor of the Farmers' Register.

September 20th, 1841.

Dear sir:—As the season is fast approaching for cutting up corn, I send you a sketch of a very simple implement for that purpose, which I deem preferable to the hand-hoe in every respect but one, and this is—it makes the arm slightly sore at first, until the laborer gets accustomed to the unusual motion, which he soon does. One of these implements was given to me several years ago by a very good farmer, who recommended it highly, and I have found that he did not say too much in its favor. If the cutting edge be made of well tempered steel, and always kept sharp, I believe no one could witness the use for an hour without admitting its superiority to the hand-hoe, even if that also was kept perfectly sharp.

But one great obstacle to the introduction of new tools and implements, however superior they may be to old ones, used for similar purposes, is, that too little attention is paid, by those who are prevailed on to try them, in the first place, to having them well made; and secondly, to keeping them in good order. This neglect often brings the best of them into disrepute, and they are not unfrequently thrown aside as worthless, when the fact is, that they never have been fairly tried.

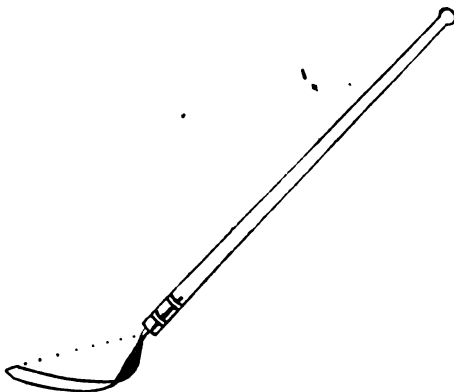
The manner of using this corn-stalk cutter (if I may give it a name) is, for the laborer to commence with two rows at a time, thus: let him take hold of the stalk or stalks, either on the right or left hand, with his left hand, and cut with the right. The man next to him does the same with his two rows and both throw their stalks together between them, taking care that their but-ends shall all lie the same way. This enables one picker up to serve two cutters; whereas, when the hand-hoe is used, each cutter must be followed by one to pick up after him, as the stalks fall in every direction, so as to require to be taken up one or two at a time, before the follower can get an armful. In the other case it is obtained at a single grasp, and the stooking goes on nearly or quite as fast as the cutting up. Another advantage which this method has over the common one is, that the jar of the stroke of the hand-hoe often shakes off the ears of corn, which increases the labor of the pickers up. This very rarely if ever happens when the corn-stalk cutter is used. But as the old adage admonishes us that "the proof of the pudding is in the eating," let the two modes be fairly tried by the same hand, and if the preference be not given by all impartial witnesses to the new, rather than to the old method, then will I cheerfully submit to whatever censure I may deserve from those whom I may have induced to

make the comparative trial. In order, however, to make it a fair one, the decision should not be left either to the laborers themselves, or to their overseers, most of whom are generally too much prejudiced in favor of all their old practices to judge impartially of new ones. Let the owners of the farms, on which the trials are made, be the judges, and let them notice accurately, by their watches, which method consumes most time. Let them also take special care that the laborers in each case move as nearly at the same place as they can be made to do. Without this precaution, they will be very apt to exert themselves most with the hand-hoe, that they may produce a decision in favor of the "old way."

In conclusion, I beg leave to suggest that the same hands should be employed in both trials, on land of uniform quality, on an equal quantity of corn, planted at the same distance, and having the same number of stalks in a hill. Nothing will then be wanting to make the comparison as fair as possible; and if any will make it, let me beg that they will report the result for your paper. I remain, dear sir, yours, very sincerely,  
JAMES M. GARNETT.

N. B. I would remark, that six laborers is the most convenient number to employ, if the two modes of cutting up all the corn before it is stooked, or if cutting and stooking at the same time he tried, because in the latter case they must be differently divided. That is, when the hoes are used there will be 3 cutting up and 3 following, but with the other implement, there will be 4 to cut up and only 2 to follow them.

#### Description of the corn-stalk cutter.



The handle should be from 21 to 24 inches long, and about the thickness of a hoe-helve.

The shank of the iron 5 or 6 inches long, as broad as the helve is thick, and confined therein by two small rings.

The blade 2 inches wide, 3-8 thick on the back, and the cutting edge sharp. Its length from the joint to its insertion in the handle, as indicated by the dotted line, should be 7 or 8 inches.

N. B. The curve being sketched from memory, may not, perhaps, be quite as crooked as it should be. If not, the defect can easily be corrected.

We should have had to regret that the late reception of the foregoing communication would

alone have prevented its appearance, in the last month's number, even if an engraving could have been procured in a few days—which is impossible in our inconvenient locality. As soon as circumstances have permitted, the publication is made. For articles designed for a particular time of publication, it is generally necessary that they should be in hand as early as the 20th of each month; and if an engraving is required, several more weeks of previous time will be required.

Though not able to judge of the superior advantages of the particular operation described above, not having seen the operation or the utensil, we have long known that the general principle was correct; that is, that the same laborer should cut the stalk with some light utensil, worked by one hand only, and hold and dispose of the stalk of corn with the other hand. Such a course was described fully in our first volume, by Major Steger, of Amelia, his utensil being a small hoe, with a short handle. And this we tried, and were satisfied of the benefit; but could not persuade overseers and negroes of the propriety of changing the old plan for the new—and the small hoes were soon laid aside, and the old plan resumed. From our trial, we should prefer a small hoe to the new utensil; but that is probably because of our want of acquaintance with the latter.—ED. F. R.

#### STRAWBERRY JAM.

From the Southern Agriculturist.

Put the fruit into a jar, and stand this in a pan of boiling water over the fire. As the boiling proceeds, keep mashing the strawberries with a wooden spatula until they are all bruised to a pulp. Then put them into a preserving pan, and to every pound add three quarters of a pound of sugar clarified in half a pint of water. Boil the whole until of due consistence, which will occupy more than half an hour; keeping the jam in constant agitation, lest the bottom should burn. When done enough, take it off the fire and put it into pots.

#### CRAB APPLE JAM.

From the Magazine of Domestic Economy.

Pare the crab apples when quite ripe. Put them into a stone jar, cover it well and put it in a pan of boiling water for an hour and a half. Then prepare the syrup with two pounds of sugar in half a pint of water, for every pound of the apples. Clarify the syrup. Then put the apples into it, and boil the whole to a jam.

#### PROTECTION OF WRENS, AND THEIR USEFULNESS.

The wren, I had always supposed, was a destroyer of bees, until I was told, a short time since, by a very intelligent lady from the city of New York, that her father used to encourage their building about his hives, by putting out all the horse skulls that he could obtain. She said that her father raised his hives about two inches, by means of small blocks under the corners, that the wrens might go under to clear the hives from moths, worms and dead bees, which they did effectually without disturbing the bees.—*Union Agricult.*

#### BERMUDA GRASS.

To the Editor of the Farmers' Register.

Dear sir:—In perusing the July number of your Register, my attention was called to an article upon the subject of the "Bermuda grass," extracted from the Milledgeville Recorder, and I beg leave, through your publication, to add my feeble testimony to the great value of this grass to our southern states. Where our lands have become exhausted from long cultivation, and improper management, and where there is nothing left us but our barren clay hills, this grass has proved to be the only one that can withstand the excessive droughts that of late we occasionally have, and which are becoming more frequent and of longer duration. It is emphatically a *sun grass*, and will flourish wherever the rays of the sun can freely reach it. There is no grass which spreads so rapidly, and I believe none so easily eradicated when required. It soon perishes in the shade; and I believe when the surface of the ground can be protected from the sun for one summer it would be destroyed, but this is only an opinion, not derived from any actual experiment, but merely from observation.

But my principal object is to call your attention to one very important error, which I think the writer of the article above referred to is laboring under—that is, in regard to its *bearing seed*. He states that it *does not* bear seed. Now, sir, this is a great mistake, or the grass which has for years in this state borne that name is entirely a different grass. But I believe he is wrong, and that the Bermuda grass *does* bear seed; and moreover I believe *every* grass, without any exception, *does* the same. To convince you of the truth of my assertion in regard to this particular grass, I send you enclosed a few sprigs of it, some of them pulled when in bloom, and others pulled when quite matured, and let you examine for yourself.

At the same time, I believe this grass does not go to seed, when closely grazed, and think the writer of the article referred to above, who signs himself a 'Clodhopper,' must have been deceived in this manner. He also states as another fact, which also conflicts with my experience on the subject, that this grass is never spread from place to place by stock. I will merely state a fact which I think will suffice to show that this is also an error. The Bermuda grass was introduced into this neighborhood some 8 or 10 years since by a neighbor of mine, who is in the habit of riding to our village, 7 miles distant, occasionally, and whose

horse is generally suffered to run in his yard where this grass is growing. In a few years after its introduction this same grass was seen to spring up all along the road from his house to town, and has, at this time, in some places spread over considerable ground.

Let this suffice, and let me close by saying, I concur entirely in the high encomiums upon this grass given it by my brother Clodhopper, and urgently recommend it to the attention of all those in our county who are desirous of having fine grass pastures, or who have old lands they wish to turn out of cultivation. And I may here state, that the best method I have found of getting it to grow upon our lands, is during any rainy spell of weather in the spring or summer, to dig patches of it up, and then to chop it up fine, root, stem, and all, and sow it broad-cast over the ground where it is desired to be grown. In this way I have succeeded in spreading it over the whole surface of a lot of ground in one summer, although that summer was so dry that every other grass died in our pastures. Very respectfully, yours, &c.

#### ANOTHER CLODHOPPER.

Jefferson county, Miss., Sept. 15, 1841.

The specimen of Bermuda grass from Mississippi is identical with our "wire grass," *Cynodon dactylon*.

The general appearance of the specimen, however, was so different from that of the *C. dactylon* growing on our cultivated land, that, at first sight, I was inclined to believe it at least a variety of that grass. But, on examining the *C. dactylon* growing where it has been mown or grazed, I find that it presents a similar habit to that of this specimen of Bermuda grass. The leaves are narrower, culms shorter, and the plant altogether more slender than when growing on ploughed land.

The *C. dactylon* has in the United States a wide range—extending as it does from New York to Mississippi.

#### M. TUOMEY.

[We learned also from a private letter received from Mr. Curtis, that he considered Bermuda grass and wire grass to be the same. It is very remarkable that a grass so highly eulogized in one region should be deemed one of the worst weeds elsewhere.—ED. F. R.]

#### OBSERVATIONS ON THE SECONDARY AND TERTIARY FORMATIONS OF THE SOUTHERN ATLANTIC STATES. BY JAMES T. HODGE.

From Silliman's Journal.

Near the Roanoke, some miles above Williamson, I observed the marl by the road-side, and although it was hard frozen and nearly covered with snow, I recognized in it many individuals of our common recent shell, the *Venus mercenaria*. This is a very poor part of North Carolina; the land is quite flat and sandy, and during the winter season one frequently rides for miles through

water several inches deep, by which the roads are flooded.

In the very western part of Jones county, I first met with the limestone of the secondary formation. It is on the plantation of Mr. Humphreys, at the heads of New river and Trent river. The rock lies in a heavy ledge on the borders of a swamp; its surface is much worn and ragged. It is of a straw color, and apparently of good quality for making lime;—on submitting a piece to chemical examination, I find it as good as the limestone of this formation usually is. It yielded in 100 parts:

Water,	-	-	-	-	1.00
Silica,	-	-	-	-	5.60
Iron and al.,	-	-	-	-	5.60
Carb. lime,	-	-	-	-	87.00
Carb. mag.	-	-	-	-	trace

99.20

Several springs come out at its edge, which bring up small fossil shells and pieces of coral. Among the shells, which are generally very imperfect, may be recognized the *Pecten membranaceus*, a *cardium*, and others common to the same formation in New Jersey. The water seems well adapted to the recent *Planorbis trivolvus*, *Physa heterostropha*, and *Paludina integra*, which inhabit it in profusion, and also to the luxuriant water-cresses, which equally abound in it. Around the limestone is a deposit of calcareous marl of a light yellow color, affording a very convenient and rich natural manure; but it has been entirely neglected, as well as the limestone, the little lime required for the country being brought from Thomaston, Maine, although they have enough of the rock, wood at the expense of cutting it only, and a suitable sandstone for kilns scattered through this region. This stone belongs to the same formation, and has been used sometimes for making millstones. Having fortunately some plans of kilns with me, I was happy to leave them, with the advice that the people make the attempt at least to supply themselves with their own lime.

Not far from this place, is that interesting locality in Duplin county, called the "natural well." It is two miles west of the rail-road, (forty-seven miles from Wilmington,) on the road from Kenanville to Elizabeth, Baden county. Before reaching it, one may notice by the side of the road a large sink-hole, fifteen feet deep, overgrown by trees and bushes; a little beyond this, a path turns off to the left to the cabin of a Mr. John Smith, within two hundred yards of which, in the woods, is the well. It is a large circular basin, about twenty yards across and sixteen feet deep to the surface of the water; its banks are nearly vertical, although the strata are entirely obscured by the loose sand, trees and bushes that have covered them, excepting in one narrow spot, where a correct section may be obtained and specimens collected. The soil, which is sand and yellow loam, a little clayey at bottom, is from three to four feet thick. It rests on the shell marl, which is about four feet thick, and under this is a tough blue clay from six to eight feet thick, overlying a sandstone like the clay in color, the lowest visible rock. The marl consists entirely of shells and fragments of shells, with a very small quantity only of fine white siliceous sand. The shells are of a great

variety of species belonging to this formation, and they lie promiscuously together in great confusion; single valves of the univalves are more frequently found than the two together, and even the stronger univalves are most often seen in fragments. So abundant are they, that in cleaning out some of the larger shells a great number of small and more perfect specimens were found in their interior, and added to my collection. A *Pectunculus quinque-rugatus*, in particular, enclosed between its two valves a multitude of shells and fragments closely imbedded in a fine clear quartz sand. The contents when picked out occupied a space full twice that in which they were so closely packed. Although the diameter of the *Pectunculus* was only two inches and one fourth, there were in it a *Cytherea reperta*, beautifully preserved with its natural polish, one and one-third of an inch long, and itself filled with other smaller shells and a purer sand than that which surrounded it—several small *Ostreae*, *Corbulae*, and duplicates of twenty or thirty other species. There are, as seen by the accompanying catalogue, about 80 species found at this locality. Of these 12 are recent, and 20 at least heretofore undescribed. Some yet undetermined remain in the hands of Mr. Conrad, and of these only the genera are given. The *Oliva idonea* has been previously described by Mr. Conrad; it is one of the most beautiful shells found here, being finely preserved, and most of the specimens not having lost their natural polish. The people living in the neighborhood know them by the name of "key shells," from their procuring them to attach to a bunch of keys. The cones are of the species *adversarius*, so named from their being nearly all reversed; one of mine is the only exception known. The bivalves are only occasionally met with entire.

It is remarked that the water in the well never varies in freshets nor droughts, and tales are told of ineffectual attempts having been made to sound it, and of a strong current setting through it, sucking down whatever is thrown in; that there is a current I doubt not, it being nothing unusual for a stream of water to sink suddenly under ledges of limestone, as at the Eutaw springs in South Carolina, and the limestone of the secondary formation I believe to be not far below the surface of the water, perhaps directly under the blue sandstone at the surface, which is very likely the upper rock of that formation, and the blue clay the lowest of the middle tertiary, as it often is (the lowest tertiary is wanting in this part of the country.) The limestone of Jones county is not far off, and such sinks as these are frequent over limestone beds; in Georgia they are called "limestone sinks."

With my valves and saddle-bags well stored with specimens, and a keg full strapped behind the saddle, I proceeded to South Washington, on the way to Wilmington. In this neighborhood I discovered again the secondary formation on the N. E. banks of Cape Fear river. The rock is a blue sandstone, containing the characteristic *Exogyra costata*, *Belemnites*, *Plagiostoma palagicum*, *Anomia ephippium*, &c. The existence of this rock between the tertiary deposits on the east and the west, seems to indicate an anticlinal axis here, which extending north, accounts for the elevation of the secondary throughout Jones county, and the broad extent of country on each side

occupied by the tertiary marls. The axis must be low, and the dips very gentle, causing at most a slight undulation of the strata.

To the east of South Washington are large tracts, called bays and swamps, one of which, called on the map Angola bay, was described to me by one who had crossed it. After traversing its margin, which was a broad swamp covered with thick trees and bushes, my informant and his companion came out upon an open heath, spreading as far as they could see, and destitute of all vegetation, save a thick covering of moss and a few scattered bushes. Through this moss they travelled on with great difficulty, plunging in at every step nearly knee deep. Procuring a pole from the trees on the border he sunk it down eight feet into the mud without finding bottom. The moss and mud of these swamps would thus seem to be those always due to peat swamps. At night they reached an island in the swamp with a few trees upon it. Here they remained till morning, and then continued their course across, and reached the other side about noon, greatly fatigued. He thinks they are called "bays" from the quantity of bay trees that grow around them. Holly Shelter swamp is similar to this. These swamps remind one of those in the southern parts of Georgia, the islands of which were once inhabited, according to an old Creek tradition, by a superior race of beings, whose beautiful women, called "daughters of the sun," occasionally condescended to help out the poor bewildered traveller, lost in their intricacies, but who, with their houses on the islands, were never to be found by man, though eagerly sought after.

At Wilmington is another interesting locality, where not only the tertiary marl corresponding to that at the natural well is found, but the secondary sandstones and conglomerates below it are well exposed on the banks of Cape Fear river. The lower tertiary is wanting, and this marl bed, which is from two to three feet thick, is seen resting upon the sandstones, containing shells belonging altogether to the upper secondary formation. Above the marl, and resting on it, the upper stratum observed is of sand and loam, containing a few layers of small white pebbles. The marl is nearly as prolific in shells as the same formation at the natural well.

Comminuted shells and fine sand form the marl stratum, and these are either converted into a solid mass not easily broken, or remain unconsolidated. The sandstone beneath is in one place a compact siliceous mass, but a little way off it changes to a coarse pebbly rock, consisting of small, rounded quartz pebbles of a dark color; and then again it becomes so calcareous that with proper care it might be burned to tolerable lime. The pebbly rock or conglomerate contains shells, and corals, and small sharks' teeth, in abundance. Large teeth are rare, as are bones which are said to have been found in it. The shells themselves have generally disappeared and left only the casts; these, though very abundant and perfect, render it extremely difficult to determine the species. The genera are principally *Cyprea*, *Cirrus*, *Gryphea*, *Ostrea*, *Anthophyllum*, *Nautulus*, &c.

The proximity of this locality to the wharves and the town of Wilmington, would render it easy for strangers to obtain specimens thence.

The marl is not here esteemed as a manure, probably because the soil is so sandy that the shells must decompose very slowly in it. By first applying large quantities of clay to it, and then the marl, no doubt very beneficial effects would result.

To the south of Wilmington I noticed the marl again on Little river, near its mouth, just over the boundary line in South Carolina. The shells closely resemble those at Wilmington, the most abundant being large *Arca*s; but they were all tightly cemented together by a ferruginous cement, forming a solid ledge on the edges of the water. This is the farthest point to the south where I observed this deposit; but I was told it occurs again on the Waccamaw river.

In treating of the tertiary formations of our country, I have preferred using the conventional names adopted by Mr. Conrad, of upper, medial, and lower tertiary, to those of *pliocene*, *miocene*, and *eocene*, applied to similar formations in Europe. The former merely indicate relative position, and are therefore sufficient at present; the latter imply a relative proportion, of course not very exact, of extinct and recent shells; and though our own formations may now each give about the same proportion with the English formations, still when two hours' work may discover more than twenty undescribed species in one locality, besides some recent species not before noticed in the formation; and when our knowledge of the living shells of our coast is so imperfect, it certainly proves that the adoption of these new names would now be hasty. It would be at once taking it for granted, (as it is certainly not proved,) that our strata will be readily divisible into the same three formations as those of Europe; and all difficulties, if any are hereafter encountered, will be too apt to be made to bend or to be neglected, for the sake of keeping to this favorite but unproved system of classification. This subject, I hope, will be more fully discussed by Mr. Conrad, and sustained by more complete details than I am able to furnish.

At the locality last mentioned, near the boundary line, are found through the fields singular deposits of oyster shells, each extending over several feet square and about two feet deep. No account is preserved of the time or cause of these collections. They were made centuries ago, probably by the Indians. Corn does not grow well by these heaps, at which I was rather surprised.

There is a well known locality of the secondary limestone at the Eutaw Springs, near Nelson's ferry over the Santee, in the western part of Charleston district. The striking similarity of this rock to that in Jones county, N. C., first attracted my attention. Like it the limestone rose above the surface in heavy ragged ledges, here at least fifteen feet high; it was of the same light yellow color, and contained similar fossil shells. Similar springs too rise among the ledges of the rock, and they contain the same recent shells, and water-cresses in greater abundance. But the water, I noticed, was lukewarm, and one of the largest of the streams, after running only about fifty yards, suddenly disappeared under the limestone, and was no more seen. The rock does not contain a great variety of fossil shells; the most abundant are some large *Ostrea*, of what species I know not, the specimens being lost. On this account,

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too, I cannot speak so decidedly as I wished to have done of the quality of the limestone, which ought certainly to be of some practical importance, being on a river navigable by steamboats, and in a region where lime bears a high price and wood is very cheap. A little enterprise and skill only are requisite to create an extensive business here in the manufacture of lime. But though its good effects as a manure force it upon the notice of those who use the adjacent fields, still no attempts have been made to extend its use farther than nature has seen fit to spread the rock, and the calcareous deposits formed from it.

So on the Edisto, in Colleton district, this rock is equally available, and equally neglected; and though lime enough might be made on these two streams to supply the whole of the eastern parts of South Carolina and Georgia, at an expense not exceeding fifteen cents a bushel, yet the inhabitants prefer to import their lime from Thomaston, Maine, and pay at Charleston \$2 per cask, or when brought up to the neighborhood of these vast quarries it sells for \$3 per cask! In Chester county, Penn., while on the geological survey of that state, I have seen lime made and sold for ten cents a bushel, where the natural facilities are no greater than here. And when on the same business in Maine, and employed at Thomaston in obtaining the statistics of the lime business, I came to the conclusion that the southern states must be remarkably deficient in limestone; that notwithstanding the difficulties the Thomaston people had to contend with, in the high price of fuel, a bad harbor, that frozen up one third of the year, and their remoteness, still they managed to monopolize the lime business of the Atlantic coast, of the Gulf of Mexico, and up the Mississippi to Natchez. The average cost of a cask of lime at the wharves at Thomaston, was, as near as we could estimate it, about seventy cents; and this included twenty cents for the cask. But unfortunately the term "cask" represents no definite measure. By law it should hold "forty gallons," five bushels, but every mason of whom I have made inquiries, and who has measured them, says their capacity is continually changing; that most of them contain less than a common flour barrel, and that *three bushels and a half* is probably near the average measure of their contents. Their large size is made up by enormously thick staves, and heads about an inch thick, and frequently large empty spaces remain in the cask. Yet for this meager amount of lime the people of South Carolina are willing to pay a sum for which they themselves might make full eight times as much; and by thus rendering it cheap, the labor lost to their favorite crop would not be missed, when thereby a bale of cotton to the acre would not be considered a maximum product, nor two ears of corn to each of the widely separated hills a subject worthy of remark.

The prejudice of workmen—their not liking to use a different material from that they have been accustomed to—is one reason why the Thomaston lime has successfully competed with all other lime made on the Atlantic coast. The name of that is favorably known and deservedly so, and it will sell when another equal to it from another locality will not bring even a very inferior price. There was a remarkable instance of this a short time since in New York, some excellent lime from

Rhode Island hardly finding a market at any price. Most of the Pennsylvania lime contains magnesia, and yet celebrated as is the Philadelphia mortar for whiteness and durability, and as are the fine farms of Chester and Lancaster counties, which are enriched almost entirely by lime, there is a universal prejudice against magnesian limestones. But this cannot last; and now that the Tide-water canal is opened, the Susquehanna river lime must soon rival that from Thomaston in our southern ports; the home-made lime must here come into extensive use, though prejudice and a want of enterprise may long keep it unused and unknown. This rock belongs to the same formation, and precisely resembles much of that which I have seen in the western part of New Jersey. Its composition is no doubt the same, and this is seen in Prof. Rogers' Geological Report of that state, to vary as to the proportion of carbonate of lime from seventy-five to eighty-eight per cent., the residue being chiefly silica, with a very small amount of carb. magnesia, iron and alumina. This too corresponds with the analysis given above of the limestone from Jones county, N. C. The silica is the least injurious ingredient, its principal effect being, unless the rock is burned at too intense a heat, merely to render less and necessary in tempering it for mortar, while the magnesia is not only of small quantity but doubtful tendency, and the oxide of iron is generally in too minute proportion to seriously injure the lime by giving it a very dark color.

Besides the lime that will hereafter add to the mineral wealth of this region, there is near Pocatigo, on navigable tide water, a deposit of the purest quality of quartz sand, suitable for the manufacture of glass. The pebbles of which it consists are small, sharp, angular fragments of perfectly pure quartz without any foreign mixture. It may be obtained in any quantity, and would probably pay for transportation as ballast under the cotton loads, either to the northern glass-houses or across the ocean. The locality is just half way between Charleston and Savannah, by the turnpike, on Mr. Spike's plantation.

There is one more locality of the secondary limestone I visited, which is near the Savannah river, in Georgia, at a place called Jacksonboro'. The perfect similarity of the rock with that in Jones county, North Carolina, and on the Santee and Edisto in South Carolina, admits of no doubt that it is the same with them, and continuous through this wide extent of country. Even to the straw color of the rock, the brooks flowing out at its base, the lukewarm water, and the little shells that inhabit it, they are all nearly alike. This has been partially quarried, and the limestone burned. On opening the bed it is found to be about twelve feet thick, and within from the surface, the stone is of a much whiter color, closely resembling chalk, and appearing as if it had already been burned. The heap of rock in a hot southern sun presents so dazzling an appearance that one's eyes and head seriously suffer from closely examining the pieces. They contain a great variety of fossil shells, affording most beautiful specimens; but I have not succeeded in obtaining those I collected. A rude kiln has been constructed of the coarse sandstone belonging to the same formation, and a considerable quantity of lime made. It is very white and good lime, such pro-

bably as the other localities described would afford, if worked as extensively. It is packed in boxes, which hold about three bushels, and these are sold along the river at the same price as a cask of Thomaston lime, *three dollars*! The locality is probably injudiciously selected as it is eight miles from the river, up a little stream called Brier's creek, which is navigable for boats and rafts but a short time in the year, while the same bed might no doubt be found and opened on the river.

The inferior limestone at Shell Bluff belongs to a higher formation, and cannot be so important, though here too a great deal of cheap lime might be made from the rock and the fossil *Ostrea*. The specimens I collected at Shell Bluff, and on which I depended to describe the locality, having been lost, I will attempt no account of it, as it could now be only a repetition of what others have said.

#### CULTURE OF THE SWEET POTATO.

From the Southern Agriculturist.

It is the rule of the Beaufort Agricultural Society, to appoint at each meeting, a subject for conversation and discussion at the subsequent one—and the "best mode of planting, cultivating, digging in, and preserving the sweet potato," having been under consideration at the meeting held on the 21st August, the following may be set down as the results of their consultation.

It was the opinion of a majority of the members present, derived from actual experiment, that the sweet potato should be planted *whole*, instead of the seed potatoes being cut, as is commonly done in this section of country—that, besides yielding as much when planted whole, this method has the advantage of giving a certain stand, more vigorous growth, and earlier vines. It was further the opinion of one experienced member, that potatoes planted whole and covered deep—say five inches—would grow well, and be secure against crows; he pursued this plan, and put out no field minders.

The best method of *preparing the soil*, was by passing a cow-pen over the land, six months or more before the time of planting. The ground was to be listed soon after the pens were removed—to be banked heavily when planted, and the seed inserted deep—say four or five inches in the bank. Early in March was the time decided on by the majority, as the most suitable for planting—and it was held judicious culture, to shave off the tops of the beds by a sharp hoe, as soon as the early shoots were making their appearance.

With respect to the important subject of *preservation*, there were advocates for each of the plans usually resorted to, but the majority were in favor of the bank in preference to the potato cellar. It appeared, however, that with care, the potatoes might be perfectly well preserved in either mode. If in banks, not more than thirty bushels were to be put into each bank, they were to be covered with corn-stalks in preference to pine-trash, and a stake was to be placed in the centre of the bank, which being withdrawn after some days, left an opening for ventilation. The orifice was to be

stopped in wet or severe weather to exclude rain or frost. If the potato cellar was adopted, it was material that the puncheons of which it was built should not be wet, or unseasoned—that the house should not be filled to the ridge pole—that air-holes should be left in the roof to let off the moisture exuding from the potato, and that a portion of the front part of the structure should be partitioned off, as a place for the watchman, and the smoke from whose fire would thus be carried by the wind throughout the cellar, and exert an important influence in preserving the potato. The air-holes to be stopped in heavy rains, or severe frost. The fittest time for digging in the potato was after the first white frost—and it was thought best, where banks were used, to leave the banks uncovered by earth for some days, protected by corn-stalks merely, from the weather, until some of the superabundant moisture should escape. It was thought that the use of the plough in gathering, and the wagon in transporting the potatoes, would be injurious to increasing the chance of being bruised, and the liability to decay. Respectfully, &c. W. E.

Beaufort, Sept. 10th, 1841.

#### NOTICES OF GRASSES AND WEEDS.

(Subject resumed from page 570.)

[Since the last publication on this subject, a private letter has been received, from a much esteemed correspondent, who therein expressed his gratification at the effort thus making to remove the confusion in regard to the many different names of common grasses. But he qualifies his approbation by an objection that may seem valid to many others of our readers, and which therefore will be mentioned to be removed here. The identity of the much debated "wire-grass" was fixed by Mr. Tuomey, by ascertaining that it was the "*Cynodon dactylon* of Persoon, the *Digitaria dactylon* of Elliott, *Panicum dactylon* of Linnæus." Our correspondent fears that by thus presenting three names instead of one, the "confusion will be worse confounded," and that these three, because of their foreign structure, would be even less significant, to general readers, than as many or more provincial or vulgar names. A provincial name teaches nothing, and more often leads a remote reader to error than to truth. But each of these three botanical names applies to the same plant, and would be so recognized by every botanist, or other person referring to a botanical catalogue. Besides, any botanical work which gives either name would state its authority, as Persoon for the first above, and at the same time mention the other names and the authority. Such superfluity of names is indeed some slight inconvenience, but can lead

to no mistake—and it is not often that more than one botanical name is required to be given for one plant.

On the other hand, compare with these means of certain identification, the number of provincial names among which the agricultural public have been floundering for years—and which all attempts of the unlearned (including ourself) to rectify served but to make worse. Thus, even Dr. Darlington, on our misinformation, supposed wire-grass to be the *Triticum repens*, or couch grass, and on previous and as incorrect information, that it was *Poa compressa*, or blue grass. Now with either one of all the three names given, in the few lines of botanical description annexed, not only would an able botanist like Dr. Darlington know, and teach correctly, which is any disputed species, but others almost unacquainted with botany, and merely having access to any common botanical work, could either reach the same truth, or at least avoid falling into any such gross mistakes as have been common and long existing. Thus, it may still be doubted by many of our southern readers, who are deeply interested in the issue of the question, whether their much-prized Bermuda grass and our odious wire-grass are the same. But any of them can determine the matter for themselves, properly, by observation of the grass next summer, and referring to the description.—ED. F. R.]

#### EASTERN SHORE BEAN—CASSIA CHAMÆCRISTA.

**CASSIA.** *Sepals* five, unequal. *Stamens* mostly ten, free, unequal; three lower ones longer; four middle ones shorter and straight; three upper ones with abortive anthers. *Anthers* dehiscent at the apex.

*C. chamæcrista*, Linn. Smoothish; leaflets in ten to fifteen pairs, oblong-linear, mucronate; gland sessile on the petiole; peduncles two to three flowered, above the axils, shorter than the petiole; two of the petals spotted; legume pubescent.

**Habitat.** Sandy places. New York to Carolina, west to Mississippi flowers from June to August.—*Stem* a foot or more high. Flowers yellow; sometimes the base of all the petals spotted.—Beck. M. T.

**Synonymes.**—*Magothy bay bean*—*Magadaba bean*—*Sensitive pea*—*Partridge pea*, (which last name is more generally applied to another common plant.)

This is a very remarkable and valuable plant—valuable as a meliorating green crop furnished perpetually by nature—and remarkable and singular in this respect, that art has not yet been able to improve, or alter the benefit offered there-in by nature. The luxuriant and abundant growth



of this bean, as forming a cover to entire fields, is almost confined to the sandy peninsula, called the Eastern Shore, between the Chesapeake bay and the Atlantic ocean—and, especially to the lands cultivated alternate years in corn and oats; which however is the almost universal rotation of crops in the Virginia part of the peninsula.

The Eastern Shore bean is an annual plant of the pea tribe. The stem is upright, with spreading branches; both are strong, hard and woody in texture. The leaves are shaped like those of the locust tree, (and most other plants of the pea kind,) and the flowers are yellow. Altogether, it is a beautiful plant, if viewed singly, and still more in the mass when covering thickly the whole surface of a field, and in full growth. The seeds are in pods, and are black, flat, and shaped like a rhombus with the angles slightly rounded. They are very hard, so that they may remain, if covered too deeply, for years in the earth without sprouting. To this is owing the subsequent perpetual succession, in spite of the many successive young growths killed by the plough during a year of tillage. The plants grow usually from one or two feet high, on poor and middling soils of the Eastern Shore, but form a heavier coat of herbage than would any other green crop, natural or artificial, without the aid of tillage, on the like soils.

When a field covered by this plant is ploughed in the winter or spring for corn, seeds in abundance are buried. Many young plants spring up, but are easily and effectively destroyed by the ordinary tillage of the corn. A few bean plants standing close to stalks of corn only escape the plough, and are left to mature their seed. The next February oats are sown on the same land. The beans, from seeds recently brought near the surface by the ploughing, come up so much later as not to injure the oat crop; and, when the latter is reaped, early in July, the thick under-growth of beans is not more than 4 to 6 inches high. In August it is in full growth and luxuriance, and remains so until the plants are killed by frost, after which the land is ploughed for corn again, and the same severe course of cropping is kept up perpetually. It is one of the excuses given for that scourging system of tillage, that the benefit of the fertilizing bean crop can not otherwise be had. For if a year of rest follow the oat crop, (as in the three-shift rotation) the bean growth gives way on the third year to other volunteer growths—and if the change be made permanent, that the growth of beans becomes thinner and thinner every rotation, until its important use and value are lost. The cleaning tillage of a ploughed crop, (as corn,) as often as every other year, seems to be essential to the best growth and certain succession of the bean crop. I have tried in vain (by sowing the seeds) to obtain a good cover of this plant on land under the four-shift rotation. A very thinly sprinkled growth only stood, even on land as sandy as the general character of the Eastern Shore lands. On such sandy land, in Prince George, Surry, and probably still more in other lower counties of eastern Virginia, the plants are furnished by nature, but so sparsely as to be scarcely noticed, and not of any appreciable value for the quantity or size. It seems to me that the *saltiness* of the soil, which is continually subject to be covered by the vapors of the Atlantic ocean, and sometimes even

sprinkled by the spray of the broken waves in violent storms, is as important to the growth of this plant, as the sandiness of the land, and its peculiar rotation of continually recurring grain crops. This opinion has not been advanced by any of those better acquainted with the plant, but has been formed upon my own failures to produce a good growth far from the influence of the sea, and from the superior growth seen on the lands most exposed to that influence, even though the most unproductive under any other growth. On one of the sea islands which is so sandy that all cultivated crops were very mean, and where the highest storm tides swept nearly over the whole island, I saw the general bean growth was far more tall and luxuriant than on the richest lands of the peninsula. At the time, I attributed this to the excessive proportion of sand in the soil—but since, its saltiness has seemed a more probable cause. If this inference be correct, salt must be a specific manure for the Eastern Shore bean; and through this green manuring crop, the manuring effect of salt is produced *indirectly* upon the cultivated crop.

The correctness of this supposition, that salt is a specific manure to the Eastern Shore bean, might be easily tested by applying a very light dressing of salt to some of the growth in a place far remote from the sea.\* E. R.

#### SANDY BEACH BEAN.

*Cassia aspera*, Muh. Strigose, rough: leaves in many pairs, linear, lanceolate, ciliate: peduncles few flowered, above the axils: stamens seven to nine: three longer.

*Habitat.* Sea-shore. Annual. Flowers from July to September. Can be distinguished from the other species of cassia by the hispid stems. M. T.

Of this plant I know of no name applied by any other person, and of course have no synonyms to furnish. I have never seen it except as growing on the Coggins Point beach, and that of the adjacent farm, in Prince George county, and it is not more than seven or eight years since I first observed it there. To my eye, it was in appearance precisely like the Eastern Shore bean, and in every respect, except in being of much taller and stronger growth, and forming a much heavier cover on the land where it stood thickly. It stands generally above three feet high, often four; and a plant standing alone has been found five feet high. The plants grew in the almost pure river beach sand, barely above ordinary high water mark, and reached by high tides. This locality was not supposed to be that preferred by the plants, but forced upon them because the seed had floated there on the river. But subsequently facts induced me to change that opinion. I was so impressed with the supposed value of this plant, for a green crop, and its apparent superiority in product to the Eastern Shore bean, that with great labor I saved about a gallon of seed, and sowed them with wheat in autumn on a sandy marled field. The next year showed a

\* This plant, and its value in connexion with tillage and improvement, were noticed at length at page 234, 5, vol. iii. Farmers' Register, in an account of a visit to the Eastern Shore of Virginia, by the editor.

very scanty growth of small plants compared to those on the sand beach—and since not one has appeared where sown. On the beach they continue to grow luxuriantly on detached spots, and maintain their earliest ground. The particular sand beach on which only this growth is known has some admixture of broken shells, and also of rich mould washed from higher land. There can be no salt in it, as the river water is very rarely brackish, and only in remarkably dry summers.

This plant would not serve as well as the Eastern Shore bean, which it so nearly resembles, for a green manuring crop on land regularly cultivated; for, if the former would grow on the fields as luxuriantly as on the sandy beach of James river, no plough could turn under the cover of the land. But, if a salt soil is not injurious to its growth—still more, if salt be beneficial to it, as I have supposed of its well-known kindred plant—then the sandy beach bean would serve admirably well to be set on sea-coast islands and beaches of almost pure sand, which are in danger of being encroached upon and washed away by the sea. Such a thick and heavy growth as this, being fixed where scarcely any other can live, would bind the before loose and shifting sand, and prevent its being carried off, either to the sea by the violence of the waves, or by the winds, when dry, to gradually spread over and destroy cultivated farms in the interior. One or the other, or both of these destructive operations of storms are continually in progress on some of the sea-islands of Virginia, and on every other low sandy sea-coast.

E. R.

**POVERTY GRASS. *ARISTIDA GRACILIS*, AND  
*ARISTIDA DICHOTOMA*.**

**ARISTIDA.** *Glume* two-valved, membranous, unequal. *Paleæ* two pedicellate, subcylindric; lower one coriaceous, involute, three awned at the tip; upper one very minute; or obsolete. *Scales* collateral. *Panicles* contracted.—*Beck.*

1. *A. gracilis*, Ell.; stem very slender: flowers in spikes: spikelets few flowered, somewhat remote, appressed; lateral awns short, erect; the intermediate one longer, expanding.

2. *A. dichotoma*, Mx. caespitose: culm dichotomous: flowers racemose, spiked; lateral awns very short, intermediate ones contorted.—*Eat.*

M. T.

**Synonymes.**—1. *Aristida gracilis*—*Hen's nest grass*.—*Hen grass*.—*Poverty grass*, the name adopted in 'Essay on Calcareous Manures.'

This annual grass in its size and appearance is as small and contemptible, as it is worthless to agriculture and in every other respect. It is however well deserving of observation as being one of the most striking and unerring indications of the quality and chemical constitution of soil, and thereby serving to direct what kind of manure is wanting, and is essential to its improvement.

The poverty grass usually grows to about six inches high. Its stem is straight, hard, and not larger near the ground than a small pin, or mid-dling sized sewing needle. Altogether, except in its diminutive size, its general appearance, in stem and leaves, is much like that of broom grass,

(*andropogon scoparius*,) before the latter blooms. As small as is this grass, and perhaps unnoticeable it standing singly, it forms in the mass, and covering as it does entire acres and even fields, one of the most uniform and striking features of the poor lands of lower Virginia. Under the ordinary three-shift rotation, of 1, corn, 2, wheat, 3, pasture, this grass is the general growth of the poor land on the third year; and by winter, it remains almost the only vegetable matter on the grazed land. For it is rejected as food by the cattle, and its very hardness and elasticity prevent its being much destroyed by being trampled upon. After being killed by frost, its color changes from green to a dingy white, which gives a general and uniform light color to the fields through winter, and serves to show, in strong contrast, any spot of better or improved soil, by the different color. Next to *sheep sorrel* (*rumex acetocella*) the presence of poverty grass is the surest indication of acidity of soil, and its natural poverty; and consequently (according to my views) that the application of calcareous manure would be there highly advantageous—and indeed that, without it, the soil can never be durably or profitably enriched. Wherever a field is whitened in winter by the abundant growth of this grass, there can be no mistake as to the soil being of the bad character just described. And when such land is marled, this growth disappears immediately and entirely. This effect, and the change of appearance thence caused, are so certain, that if marl has been scattered irregularly and no marks left of its outlines, or of vacancies, the subsequent growth of poverty grass will show precisely the limits of all the omitted spots. In this manner I have discovered, years afterwards, in fields generally marled, small spots left unmarled by the accidental omission of a few loads wanting to finish a row. Thus, in the general, the growth of this grass, or its subsequent disappearance, will show with absolute certainty to the farmer the chemical constitution of his soil, in regard to its acidity or alkaline (or neutral) quality—and, accordingly, its unfitness or subsequent fitness for receiving benefit from putrescent manures.

2. *Aristida dichotoma*. No provincial name known.

As common as this grass probably was in the region where I have long lived, and on the fields which I had tilled, its existence was not known to me until very lately, as distinct from the common "poverty grass" last described. The grass now under notice is a kindred species, very like the other in growth and general appearance, and, if ever before observed by me, had been taken for the larger plants of the same. When gathering specimens lately, as supposed of the former kinds to be examined by Mr. Tuomey, he remarked the difference, and first drew my attention to it. If but a single specimen had been selected to send to a distance, it is more than probable that it would have been of this larger growth, chosen as a fine and well developed specimen, and thus I should have misled the botanist to whom it would have been referred for classification, by presenting one grass for another supposed to be perfectly well known. Thus a new cause of error would have been brought to increase the existing confusion of names. The circumstance is mentioned to

illustrate the difficulty of selecting specimens of even what are supposed to be well-known grasses.

Knowing so little of this grass, it would not have been described or mentioned, but for its near resemblance to the common poverty grass. The *A. dichotoma* was first gathered intermixed with *A. gracilis*, growing on poor light land in Surry county. And when its distinct characteristics had been pointed out, plants were observed standing singly and widely scattered, on almost every untrodden part of the clay roads, where no other plant grew, or perhaps could live. From this single fact alone it was inferred that the growth of this grass indicated a still greater degree of poverty in soil than the poverty grass. This species grows from 10 to 15 inches high, with hard wiry stalks and narrow leaves, like the smaller poverty grass, but differing not only by greater size, but also in the stalk diverging slightly from a straight line at every joint, making at each a very obtuse angle. E. R.

#### ON THE NECESSITY OF A PROPER ROTATION OF CROPS.

To the Editor of the Farmers' Register.

To improve agriculture is to discharge a duty which we owe to ourselves, our posterity, our country, and our God. If the suggestions of self-interest be attended to, we are admonished to improve our land. If the claims of posterity are acknowledged, we are bound to improve our soils. If philanthropy has an abiding-place in our bosoms, and the welfare of our common country beat heart, we may render her a permanent benefit by turning our attention to the improvement of agriculture. If we feel grateful to a kind and beneficent Providence for the many blessings that we enjoy, we should improve our lands as an imperative duty. The individual that exhausts the soil by an improper course of tillage, not only disregards his own interest and the claims of posterity, but he inflicts a serious wound on the prosperity of his country, and assists to choke up that channel through which so many blessings are made to flow. These reflections might be followed out to almost any length, but I forbear. My object at present is to point out the way in which (as I think) the agriculture of the country may be improved—and in no way more speedily than by the adoption of a *proper rotation of crops*.

No branch of our business seems to be less understood than this. It must be obvious to every one that the selection of suitable crops to succeed each other is a subject of the greatest importance to the practical agriculturist, and one upon which essentially depends the improvement of the farmer. It appears to be a well-established fact, that there are certain juices or substances contained in the soils, either in a liquid or gaseous form, that are taken up or consumed as food by certain plants, while those same substances would be rejected by certain other plants. If this be admitted, we at once see the necessity of so arranging our crops that all the juices of the soil may at proper times be taken up by valuable crops. The propriety of this course seems to be fully understood by farmers generally in regard to the management of their stock. Our barns contain food

highly nutritious to stock; but while we find the corn greedily devoured by hogs, they reject the corn leaves, which is found to be excellent food for cattle. We therefore introduce cattle to consume that which is rejected by hogs, well knowing the litter from the cattle to be good food for a corn crop, and besides, the cattle of themselves are valuable. It requires but little penetration to discover the analogy between the two cases. At the expense of a great deal of labor we cultivate and gather in our crop, which is all profitably consumed by different kinds of animals; but if we were confined to one species alone, and that part of the crop which it rejected was an entire loss, farming would indeed be a poor business. It also requires a great deal of labor to amass any considerable stock of manure or food for plants, it seems equally plain, if we have but one or even two kinds of crops to consume this stock of food, we have every reason to believe that a large proportion of that would be rejected by these crops, consequently a heavy loss is sustained by the farmer.

If the subject was exhausted, and nothing more could be said in support of a proper rotation of crops, I see no reason why every farmer should not immediately turn his attention to the accomplishment of this object, but there are other arguments that might be used, and strong ones too, and if used by a competent person they would be irresistible.

I shall now attempt briefly, in my feeble and imperfect way, to point out those crops, and the manner in which they should succeed each other, to form what I conceive to be a proper rotation of crops. And to enumerate some of the advantages that will arise therefrom. I wish not to be understood as offering any thing new, but only recommending after a partial trial its superiority. And I fancy my opinions will have more weight with some farmers, who may entertain an old fashioned preference for that which falls from the pen of the practical farmer, when I inform them that I am a practical farmer. My only means of support are drawn from the soil, and I have, within the space of seven years, nearly doubled the product of my land, without the aid of any other means than those within the reach of almost every tiller of the soil. The reader, may here wish me to stop, and answer the question, how have you effected this? I will answer it. I have used sand on some lands, clay on others, and lime on nearly all. Thereby improving the texture of the soil, and forming a permanent basis for improvement. All the vegetable matter within my reach is also bestowed on the land. But the improvement has been effected mainly through the instrumentality of a proper rotation of crops, which places at my disposal a liberal supply of vegetable matter, which is as follows: 1st, Indian corn, which receives nearly all the manure, and prepares the land for a broad leaved or green crop. 2d, peas, which keep the land in a good state for the reception of wheat and clover, or oats and clover, and obviate the very serious disadvantages of two narrow leaved or white crops succeeding each other. 3d, wheat and clover or oats and clover. 4th, grazed. The grazing of land, so much abhorred by some persons who esteem themselves good farmers, may be introduced to great advantage. It supersedes the necessity of a standing

pasture, likewise of the trampling roller, furnishes a more abundant supply of milk, butter and meat, checks or completely destroys the growth of bushes, and destroys myriads of insects that prey upon our crops. 6th, —\* a valuable crop for the land. Such is the rotation of crops, which I am disposed to believe unites more advantages than any other that I have yet seen offered to the public. It is true, some situations may not be so well suited to the adoption of this course; but of this fact I am fully satisfied, the texture of our soils may be made perfect. The seemingly abundant supplies of vegetable matter may be exhausted; yet a new-failing and ever-increasing supply of vegetable manure can only be obtained through the medium of a proper rotation of crops. J. S.

## ON MUD.

From the London Farmers' Magazine.

Mud is the sediment, slime, or uliginous matter found in the bottom of ponds and of all stagnant waters, and is mostly composed of the earthy particles collected by the water from the neighboring grounds, and deposited in the hollow places where the waters congregate and lose the power of further progress. Leaves of trees, and various collections of animal and vegetable matters, will be added in many situations, and the composition of mud will in every case be regulated by the nature of the substances that come within the reach of the waters that flow into the pond. In the vicinity of woods much vegetable matter will be found in mud; near farm-yards, both dung and urine will be found in the ponds, while in open situations, earths and sands will be the principal materials washed down and carried along by the rains and currents. Mud in any form is an excellent manure; the particles are in a minute state of reduction, and are in the fittest possible form for blending with the soil—becoming a part, and adding to its fertility. Ponds are most conveniently emptied during summer, when the mud may be laid in a heap in a convenient place, and be frequently turned over in order to bring into life and destroy the seeds of vegetables that may have been deposited by the water, and which will lie many years in a dormant state, and again vegetate on being exposed to air and light. When this purpose has been effected, a good mixture of slaked or dead lime or of stable dung may be added; and after being again turned over and mixed, the heap will be ready for being applied as a top-dressing, and may be used at the rate of 20 to 30 cart-loads to an acre of grass land, and must be hush-harrowed and rolled during the first dry weather in the spring after application. All such compost used on grass lands should be spread by shovel from the carts without laying it in heaps, the bottoms of which are usually left too rank, and require much pains to spread abroad; by spreading from the carts, the work is finished at once and for that purpose a man will be required to assist the cartier in spreading on the land, and to keep the carts moving as quickly as possible; and that little time be spent in standing, two or three or more carts may be used as distance may require.

\* Mud may be laid on fallows or on corn lands

previous to ploughing for a crop, or on any grass lands in a fresh unmixed state, and benefit will be derived in all cases; but it is more agreeable with our notions of the action of manures, and with the results of our most approved practice, to allow it a time to dry, and to turn the mass repeatedly, and by thus reducing and blending the terrene particles, facilitate the mixing with the soil, and consequently the action of the various substances in producing food for plants. The dry state is also much preferable for equal distribution and incorporation; while, in a moist state, it will adhere less or more, and be spread in lumps. The earths in mud, being in a reduced state, do not require a destructive solvent, and caustic lime is not required, as it would corrode and dissipate the vegetable matter.

The mixing of mud or any earthy substances with farm-yard dung, may not be advantageous, though it has been much recommended; the fine earths and straw mixed together, make the future management inconvenient, and if the latter substance be decomposed to the fineness of the earths, much loss of bulk will ensue. Earthy materials are best mixed with similar substances.

"Fleech" ouse, or sea mud, is found at the mouths of rivers which admit the tide, and is usually deposited in bays and corners where the easy motion of the waters allows it to settle. Spaces of land are also covered by the flowing of the tide, and in many cases the soil forms a good manure. It has been conveyed by water to considerable distances, and mostly applied unprepared on land being ploughed for crop, where it not only yields immediate support to the crops, but adds to the staple of the soil.

It has been found very useful in improving mossy lands, but in other instances the repetition of heavy doses was not attended with any benefit; and in many places, the use is entirely neglected from the substances producing no effect on any crop where it has been fairly tried. The quality is various, the carriage heavy, and the effect very uncertain. J. D.

## ON LUCERNE.

From the London Farmers' Magazine.

The cultivation of this plant is extending since its valuable qualities have become better known, and the foddering of horses and cattle in enclosed yards has been adopted. It succeeds well upon any description of land of deep staple, provided the subsoil is dry; but this is not always an exception, as upon some of the strong clay soils of good quality it succeeds as well as upon most others, which is not in accordance with its general habits, as no drainage except that effected on the surface can be given; and as far as my experience extends, I have found all descriptions of soil that will produce mangel wurzel and Swede turnips in perfection, will likewise produce this excellent plant in perfection. I have also found it invariably succeed well after a crop of mangel wurzel, and it is rarely if ever injured by the fly upon such rotation, from the facility with which I obtain a plant under my present system, which is by sowing every year and ploughing up a portion that is wearing out, or has become overrun with grass.

\* This word is illegible in the manuscript.—Ed.

My process is simply as follows:—The land is first summer-tilled, with or without turnips, for barley or oats, and all root weeds are thereby destroyed. After the barley or oat crop is harvested, the land is immediately ploughed, and if the weather permits, one or two more ploughings are given before the winter; the land is then put upon ridges for the mangel wurzel, and during the winter or in the spring months from sixteen to twenty loads of good compost manure are added, and the land afterwards planted with mangel wurzel; after that crop is gathered in November, the land is again carefully ploughed, and in the following spring, if perfectly dry and friable, another ploughing is given, or it is scarified so as to produce a fine tilth upon the surface; and about the middle of April the seed is drilled in, at the rate of about 16 lbs. per acre, in rows ten inches distant from each other, or it may be sown broadcast with 20 lbs. and lightly harrowed. The sowing may take place at any time after the middle of April until the middle of June, but should not be sown earlier; the late frosts being equally injurious as the fly, which frequently destroys it altogether. Upon the young plants appearing and becoming well established, the land should be kept free from weeds by hand-weeding and repeated hoeings; at midsummer or soon after, it should be mown, and again mown early in September. In this process the scythe should have a keen edge, and upon no account should it be cut with any but a sharp instrument, as, if bruised by that operation, the next shoots will be weakened and dwindling. In the autumn, after the cuttings have been completed, sheep should be closely folded upon it; and if fed upon the spot with turnips, cake or corn, so much the better. The manuring on this plan is better adapted to ensure a full crop than by any other mode; and whilst it prevents the grass increasing, it tends to increase the produce in the greatest possible degree; but if sheep cannot be available, a dressing of well-mixed compost, consisting of stable dung and fresh maiden earth, should be applied. In the following spring little requires to be done, further than picking off the loose stones, pieces of wood, &c., that may have accumulated so as to retard the scythe during the process of mowing. If any weeds appear they should be carefully removed in March, but the hoe should be used sparingly, for at this season the slightest exposure of the roots to frost will injure it greatly. The first mowing will be ready to commence in the latter part of April or the beginning of May, and from its growing rapidly at this season may be cut early, as the succession will be better maintained; three or four cuts may be taken altogether during the summer. In the autumn of every year the folding with sheep must be repeated, or a dressing given by the compost will be quite sufficient; and if thus early repeated, the lucerne may be kept in vigorous growth from eight to ten years; but as it is far more nutritious in the first five or six years, if other land is available, and a succession of pieces is once established, it ought never to remain longer from one sowing. To those, however, who may wish to convert the land to permanent pasture, perhaps no better mode can be adopted than by letting the lucerne continue until the natural grasses supersede it. It is not necessary literally to follow the plan I have laid down; I only state

it as my practice, and by that I succeed. The essential points are—First, that the land should be thoroughly cleaned, but the lucerne does not succeed well immediately after the fallow until a crop of turnips, mangel, or some other crop has been taken, that has also been kept free from weeds. Secondly, it should not be sown too early, and the seed should be new. Thirdly, clean thoroughly the first summer, and regularly fold upon it with sheep afterwards, discontinuing the hoe altogether. As the produce must vary according to the nature and quality of the soil, no statement can be furnished of the quantity other than by stating the weight of that which has already been produced; three cuttings from good land will yield from five to six cwt. per square rod. Upon two acres I have kept six horses and colts from the middle of April to this time, besides a portion used for weaned calves. Upon another farm, six acres have supported ten cart and two nag-horses during the same period. And a friend of mine, who has a very strong clay land farm of nearly 400 acres, has kept sixteen powerful horses upon eight acres, from April to October, for several years past, with the exception of three weeks between the first and second cuttings when fed upon tares. I find that my horses maintain themselves in condition without corn, and perform their work better than others that are fed upon cut clover, tares, &c., and one bushel of oats each per week. A fine piece of lucerne I calculate to be worth from 20l. to 25l. per acre; if cut for hay it should be thoroughly made, as heating upon the stack spoils it, and makes it mouldy.

ROBT. BAKER.

*Writtle, Essex.*

#### ON STORING TURNIPS.

From the London Farmers' Magazine.

Sir,—I have observed in different agricultural publications many methods recommended for the storing of turnips in winter; and amongst all those plans I have never seen any thing so simple or so efficacious as the one I have adopted with great success for several winters. I am only a small farmer, and usually store for winter and spring use about 30 tons of Swedish turnips. My method is, to make a long heap of turnips about a yard and a half wide at the bottom on a dry piece of ground, and pile them up in a triangular form as high as they will stand; then cover them with sods cut from a moss, which I procure about half a yard square. The sods when properly cut and taken care of will, from the quantity of heath in them, last several winters. Those I intend for covering my winter stock of turnips this season having been cut from the moss in 1839.

I have not found in my stock of turnips, since I adopted this mode of preserving them, 20 lbs. of rotten or decayed turnips; and I usually have some as late as the end of May or beginning of June, at which time this year they appeared as fresh and juicy almost as when they were stored in October last.

Any farmer living near a moss has a ready, cheap, and most efficacious covering for his turnips; and I recommend all who have it in their power, at least to try this plan one year.

August 3, 1841. A CHESHIRE FARMER.



## PARTY POLITICS AND PRIVATE MATTERS.

We give a place to the following letter entire, (omitting only the name and residence of the writer,) for the following several reasons: it sets forth in the strongest language some objections to our editorial course, which have been stated also by others in different modes; and while it offers a fair occasion to answer and remark on such objections, it also permits us to show that we (differing in that respect from our opponents) are not afraid to let the public see opinions stated that are the most strongly in conflict with our own. And, while designing to confess such course as we deem right, and are proud of pursuing, we will use this occasion to *deserve, for the first time*, (and it will be also the *last time*, unless again forced to it by the like operation of groundless charges of such offence,) the charge of treating of *party politics* in the *Farmers' Register*.

But let our friend and correspondent speak first for himself. We will not imitate the almost universal unfair editorial practice of answering an opponent in advance of presenting his argument, (and often taking care not to present it either first or last;) but, as it will conduce to clearness, and prevent the necessity of repetition, and in no way weaken the force of his attack, we shall annex our particular replies as notes to his particular charges.

—, Oct. 12, 1841.

Dear sir—I think some of the promises of the earlier numbers of the *Farmers' Register* seem to have been forgotten by the September number, if not by several others. I allude to the abstaining from politics. If political economy do not include at this time all the subjects of most violent discussion of *this day*, I have been much mistaken; banking generally, especially the regulation of the currency through the medium of the banks, being (as I take it) the most fruitful source of political vituperation of all which curse this distracted country. (a)

Now I am one of those who believe banks have done, are doing, and are destined to do more good, morally, politically, commercially, and agriculturally, than all the *marl banks* between the ocean and the mountains. (b) I believe the suspension of specie payments by our banks to have been a wise and *salutary* measure in every aspect. (c) I believe that our banks are *not corrupt institutions* in any point of view; because the men at the head of them are known by you and by me to be incapable of lending their aid to the conducting of *corrupt institutions*, and because no corruption has been proved upon them, or attempted to be proved. (d) You will perceive that, holding these sentiments, I cannot agree to assist in disseminating the errors contained in the *Farmers' Register*, particularly in the summary of news, many articles of which are taken from papers that I consider vehicles of falsehood. (e) You will therefore oblige me by placing my account in the October number of the *Register*, and

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withdrawing my name from your subscription list, unless you shall see proper to keep every *political article* out of the paper; in which case, from considerations personal to myself, and to you, I shall desire to continue to take it. (f) You will not take this objection to the paper as extending to you personally, because some of my nearest friends are to the full as *abstract*, I was going to say as *distracted*, about the banks, as you are; and because I always knew your propensity to take your own views on every subject, and therefore am not at all surprised at your present position in regard to this one. But I am, with the sincerest regard, very truly yours, ————— (g).

## EDITORIAL REMARKS IN REPLY.

(a) Our correspondent here explains what he means by our duty and pledge of "abstaining from politics," in a manner as favorable to us as we could desire. It requires, in his view, that we should abstain from questions of "political economy," and especially that portion relating to banking and the regulation of the currency, and of course the effect of these questions on agricultural interests. Now, however much we might enlarge on our very different view of the duty or the pledge of abstinence, its meaning, and its fulfilment, we will here merely refer to the fourth class of subjects designed to be treated of in the *Farmers' Register*, as stated in the original prospectus, and repeated in the work, and which class has been treated of in every volume of the work. The subject is thus stated:—"4. The discussion of such subjects of political economy as are connected with the preservation and support of the interests of agriculture." Thus, so far from being pledged to abstain from discussing such questions, the pledge given (and our correspondent, as one of the earliest subscribers, was one of the first to hear and receive it with at least tacit approval) was directly the reverse. The only doubt on this point that can remain is, whether the present banking policy of this country be a question "connected with the preservation and support of the interests of agriculture." And that it is such, and in a degree as high as even we would place it, (indeed it is our only point of perfect agreement in the whole question,) our correspondent fully admits, and very strongly asserts in a subsequent passage.

But, when driven from the above stated ground of objection, our correspondent and every other thorough bankite will still object that we argue in support of the wrong side. Well! if so, it happens luckily for the other side of the question that we stand among publishers almost alone in this error; and that when nearly all the powerful influence of the newspaper press is exerted in the support of what we oppose, our correspondent and others might tolerate the attempt to enable the public to hear something on the other side, by means of our feeble and unsupported voice. If we are so much in error as to the operation of what we deem and will still call the fraudulent banking system of Virginia, why has not our correspondent, or others like him, opposed our numerous arguments and alleged facts, by countervailing arguments and facts? Yet, in all the four years of bank suspension, and, still more remarkably, in the last nine months of our strong de-

nunciation of the system and its train of frauds and evils, not so much as one argument or fact has been brought forward to maintain the principle, or defend the abuses of the system. Plenty of other and strongly operative means have been used to put down and destroy opposers of this despotism of fraud. But no bank dignitary or bank advocate, nor even any one of the most servile and shameless of bank slaves, has been "so soft" as to attempt to maintain at length before the public either that the alleged abuses of banking did not exist, or that they ought not to be reformed.

If indeed we have violated either pledge or duty in this respect, as charged, it must have been by discussing prohibited questions, and not taking the wrong side. Now we put it to our correspondent's own sincerity and candor, whether he would have thus denounced our alleged improper meddling with banking and politics, if we had sustained the policy which he approves, instead of that which he opposes.

(b) The uninformed reader might infer from this comparison and strongly expressed preference that our correspondent meant to convey that he thought but lightly of *marl banks*; but we happen to know that he thinks very highly of their value, and therefore that his estimate of the agricultural value of irredeemable paper money banks is so much the more exalted in proportion.

(c) We admit fully our conviction that such is our correspondent's own opinion; for we know him to be an upright and honorable gentleman, and one who, however ultra as a bankite, is no more a bank slave than we are. But, while thus admitting every thing that could be claimed for our friend's sincerity and truth, and entire honesty, we must say that his opinion of the salutary effects of the existing banking system (including non-specie paying of course) is opposed, not only by all high authority among political economists, but also, and not less so, by the wisest practical men of the bank party; for example, by Albert Gallatin and Nathan Appleton, as shown in their recent able pamphlets, which we earnestly recommend to his perusal and consideration. We do not name any anti-paper-money authority—but leave the question to be settled entirely by the best and most undeniable authorities on the other and his own side of the general question.

(d) We are not sure that we know the precise force that our correspondent means to give to the word "corrupt" as he uses it applied to the banks. We think them rather the *agents* than the *subjects* of the wide-spread and general work of corruption; that they are the *corruptors*, much more than the *corrupted*. But there are other words more definite, which in common parlance are often comprehended under the general term "corrupt," and in such sense it is probably used above. If then our correspondent means that term to imply either or all the several characters of false, unfaithful or treacherous to trust and duty, fraudulent in principle and in general operation, then we assert, in opposition to him, that our banking system and the banks are each and all of these. But it would be a *non sequitur*, which we have never asserted, that the officers and directors of these institutions are therefore or necessarily corrupt. And it is a still more gross *non sequitur*, that because the "men at the head of them" are honest and honorable, (for we care not to claim any ex-

ceptions,) that the banks are pure and honest, and trust-worthy. The world is full of institutions and of systems which are corrupt, and of immoral tendency and operation, of which many or most of the agents are or may be good and honest men. Our correspondent doubtless views with abhorrence the African slave trade as it was formerly legalized by the British government. Would he therefore denounce as a villain every British minister or statesman who legislated, and every military or naval commander who sought to maintain, or carry on the slave trade? If so, his denunciation would include half of the eminent men in England, during that time. Or if claiming that these men were as virtuous as most other people—or if believing, as we do, that John Newton was a pious and sincere Christian while employed for years as the regular master of a slave ship, would it be a logical deduction that the slave trade was a just, virtuous and Christian-like institution? At this time, most good and thinking men consider privateering as a system of robbery and murder. Would the expression of such general opinion convey that all who had been concerned in privateering were robbers and murderers? Or, if persons so engaged, and even leading the enterprises, have been, as many doubtless were, patriotic, honest, generous, and merciful, is that a proof that the system and operation of privateering have the like characteristics? One of every two nations engaged in war must be necessarily in the wrong; and many wars of Great Britain (for example) have been without even color of justification, and were commenced for conquest, or other unlawful gain. But no one would condemn as a robber and murderer every officer who commanded in such wars, nor even the statesmen who directed them. And yet, according to the reasoning of our correspondent, the piety of the prime minister of England, and the honorable character of her military and naval commanders, would be sufficient ground to prove the justice of the attack on Copenhagen, the conquest of India, and the present opium war with China!!! We protest against all such illegitimate deductions, and against none more strongly than that particular one of our correspondent, and which is so generally used, and which amounts to this, that because bank presidents and directors, or many of them, may be of high and honorable character, patriotic, moral, and even religious, that the principle and the operation of the institutions they manage must therefore be honest, and beneficent. We might admit the private character of the bank authorities to be as good as our correspondent's argument may require, and still the system under which they operate may be corrupt and abominable, and its operation on the interests of the community may be fraudulent, plundering, and even ruinous.

(e.) We admit, and regret, that most newspapers are indeed "vehicles of falsehood" to greater or less extent. As a matter of mere curiosity, we should like to know which paper our correspondent reads and confides in, as free from such ground of reproach; for, without knowing, we much suspect that he has had in especial favor, and will continue to have as a monitor and guide, some one paper which is among the most willing and operative among the "vehicles of falsehood." For our own little weekly "summary



of news," we can only say that we have aimed to furnish the earliest known news, and true statements of facts. And, for so concise and meager a compendium, still trust that we have succeeded in telling the truth as generally as any of his more favored newspapers, defective as may be some of the sources of our information. We admit no newspaper and no man as *authority* for all things; but will reject no supply of light or information, however distrustful in general of the channel through which it may come. Statements of facts should be judged by their agreement with truth in results, and not altogether by their sources.

(f.) According to the understanding of our correspondent of the term "political articles," (and which was answered in the first note,) we can promise no such amendment. The Farmers' Register may be deprived of all remunerating pecuniary support, and even be put down, ultimately, for sustaining agricultural and general interests against banking and borrowing interests. We know well what we are to expect from those who may honestly think and act like our correspondent—and still more from the far greater number of bankites whose motives and acts will not bear comparison with his. There can not be many, if indeed any, of the class of servile bank slaves among our subscribers; but others of that class will not the less exert themselves in every possible way to put down an uncompromising opponent to the power they serve. We have not overlooked this threatened consequence—and are not moved by its terrors. It will not be easy to *force* us to silence; and while we continue to publish, we shall not cease to maintain the contest with the fraudulent banking system, until it is either reformed, or its formerly possessed power shall be restored, and rendered impregnable. In the effort, we may be made to *break* under the storm of bank power, but we shall not *bend* to it.

As our correspondent has treated and denounced as "politics" only our articles on political economy and banking, it is perhaps superfluous to extend our defence farther than his assault has reached. But as we know that other persons, in a less formal manner and less friendly spirit, have affixed the similar charge, of treating of *party* politics, we will take this occasion to deny the charge and defy the proof. In giving any proper epitome of news or current events, it would be impossible to avoid stating sometimes the most important party events, which belong to the history of the time, and are like to have important results on matters which we are bound to state or discuss. But when interesting merely as *party* movements, or party successes or defeats, we have generally passed them over, or simply given the facts without comment.\* We belong to no existing political party, and have very little respect for the general course and measures of any party now or recently having power to rule, and to abuse their trust. Personally, and in our private capacity, none can be more unreserved and open in expressions of approval or hostility to political measures—and our course in

that capacity has been, and will continue to be, to approve what we deem right, and condemn and denounce what we deem wrong, no matter which of the opposing parties may be the agents. Our correspondent knows this—and also that we have sometimes battled by his side, against what we concurred in deeming abuses of power, just as strenuously as we now differ with him, and oppose certain abuses which he upholds and cherishes, as the greatest of public benefits. But in our editorial character we have been entirely free from party adhesion. If it were worth the while, we could adduce proofs of our freedom from the charge of bias by party, in facts showing that persons of every party have at times inferred that we belonged to the party of their opponents, and that they have condemned our publication and course, on that ground. And these mistakes were caused by the usual intolerance and bigoted feeling of party men; for as every such man expects unanimity of approval for the acts of his leaders, from all of his side, he deems the slightest expression of censure of any measure of his party, as indicating the utterer to be as bigoted a member of the opposite party. And a like mistake has probably been avoided by our present correspondent, and we have therefore escaped his rebuke being extended to that point also, simply because he better knows our free political opinions, and independence of party rule.

For more than twenty years we have had no great or abiding confidence in any dominant party, while exercising power—and fear that our own state rights republican creed and principles will hereafter, as heretofore, be professed only by parties out of power and seeking its attainment. But we also deem the destruction of the irredeemable and irresponsible paper banking system as of importance to agricultural interests and to the public weal, paramount to the temporary success and rule of any party that has existed. But no party yet, while in power, has truly opposed and restrained the growth and power of the fraudulent paper system—and we therefore have but little confidence in present more than past professions on that point. We look to the great body of the people at last to rise in their indignation and compel their leaders to do this work of reformation; and not otherwise to party action, party leaders, scarcely more than to the banks themselves, to reform their abuses and frauds.

(g.) We value highly the assurance of our correspondent's continued personal friendly regard, because we most truly reciprocate the sentiment, and could extend in words much further the grounds of our appreciation of his worth. In condemning the course, and withdrawing his aid from the Farmers' Register, he acts, as he always does, honestly, and independently of all improper motives. It does not abate in the least our estimation of his good qualities, nor our friendly disposition towards him. Of course, we consider him as wrong-headed in regard to banks, and as obstinate in his errors, as he can possibly suppose of us. But we may both be content to balance these derogatory opinions of each other, as an account settled and done with; and we trust that in every other respect our mutual opinions may continue as they are, favorable and altogether kind and friendly.—ED. F. R.

\*The publication of a general summary of news in the Farmers' Register, has been found to be of more trouble than utility, and was designed to cease with the current volume. The designed omission however, will not be influenced by any such objections as are made above.



## PRESERVATION OF VINES FROM THE RAVAGES OF BUGS.

From the Kentucky Farmer.

A friend has named to us that the following is the most effectual method to preserve young vines from the ravages of the bugs:

Take a few branches of cedar top, boil them in water so as to make a pretty strong decoction—and after it is cold, with a watering pot, wet the vines, and not one bug will touch them. This must be repeated every few days, particularly after a rain shall have washed off the decoction.

## SUMMARY OF NEWS.

Friday, October 1, 1841.

Judge Tenney of Louisiana has been killed in a duel with rifle and bowie knives. The quarrel was produced by a judicial decision made in court by the judge. This is a beautiful illustration of the "independence of the judiciary."

A convention of slaveholders was held in Maryland on the 15th. Resolutions were passed that a state convention of persons favorable to the protection of the slaveholding interests of the state [against northern philanthropists and abolitionists.] should be held at Annapolis on the first Monday of January next. The convention will be composed of 480 persons.

The difficulties of the Helderberg district continue, and have increased. The tenants of Van Rensselaer have put the law at defiance. A sheriff who went to execute a legal process was seized, tied, and barely escaped with his life. The lawless residents of the district are organized for resistance to law.

The sub-treasury safe at Chicago, in the office and charge of E. S. Prescott, Receiver of the Land Office, was opened on the 11th ult. and robbed of nearly \$11,000, mostly in gold. It is presumed that the receiver's bond will cover the amount, and of course the government will not be the loser.

A sudden and unusually high inundation has lately taken place of the Savannah river, which has done much injury to crops and other property. At Augusta and Hamburg, the river rose 20 feet in one night. The site of the latter town was barely above the flood.

During the week ending on the 11th, there had been 245 deaths in New Orleans, of which 164 were by yellow fever.

The barque Florida, from Canton, was wrecked on the coast of New Jersey, on Wednesday the 22d inst. Vessel and cargo totally lost. The cargo was of tea and silks, worth \$200,000. Crew all saved. The accounts by the Florida were to 19th of May from Canton, and add nothing material to the previous information, except rumors.

Governor Cannon, of Tennessee, died on the 8th inst. of paralysis.

The St. Louis papers state that the three men (Burr, Walsh, and Thompson) taken in Missouri and charged with enticing away negro slaves, had been tried at Palmyra on the 10th and 12th inst., convicted and sentenced to the penitentiary for twelve years.

There are strong reasons for believing that an armed force consisting of several thousand men have been for some time organized within the state of New York for the purpose of co operating with the Canadian patriots, as they are called, in another attempt at revolt. We are informed on good authority, that the

organization of these men within our own territory was never so complete as it is at present; and that it comprises a body of fifty or sixty thousand persons, who are ready to march at a moment's warning across the frontier, and to carry fire and sword into the heart of the Canadas. Whether the United States government is aware of this alarming state of affairs, we are unable to say; or whether General Scott in his recent visit to Buffalo and Detroit succeeded in discovering what was actually going on in the vicinity of those places. It is very evident, however, to observing men who reside near the Canadian frontier, that unusual preparations have been making for some time past among those who are friendly to the cause of the patriots, and the most disastrous consequences are apprehended unless this conspiracy against a nation with whom we are at peace, is broken up in time. The recent robberies of powder and arms were doubtless committed by persons in the employment of the conspirators, and similar seizures will be attempted by them hereafter, from time to time.—*Troy Whig.*

A proclamation has been issued by the President of the United States, warning citizens against making any hostile movements against Canada.

There has occurred another border difficulty in an outrage committed by Canadians. Col Grogan, formerly a "Canadian patriot" noted for his active participation in the insurrection, but since a resident in the United States, was seized in his bed, some miles within the American line, wounded, and carried in chains to Montreal, where he is imprisoned.

An unsuccessful attempt was made to blow up the British armed steamer lying in the Niagara river. The floating fire apparatus exploded too soon, when within about 300 yards of the vessel.

Thirteen steam boats have been lost during the last four months between St. Louis and the City of New Orleans, most of them with valuable cargoes. The water at this time between here and the mouth of the Ohio is exceedingly low, and navigation consequently attended with great risk and danger in consequence of the snags.—*Alton (Il.) Tel.*

By this morning's mails, (Oct. 1.)

President Tyler has ordered that editors of political newspapers shall in no case be appointed post-masters, and that all such now in office shall be turned out. Good! This evil thus corrected has been a shameful and unjustifiable abuse and means of corruption.

Another revolution has broken out in Mexico, and Gen. Santa Ana is again in the ascendant.

The Congress of Yucatan has met and declared the entire independence of that former province of Mexico.

An Anti-Slavery Convention of Connecticut have "respectfully" asked of President Tyler to emancipate his slaves.

The "shaving institution," known as the Exchange Bank of Indianapolis, stopped payment on the 15th inst. It is not known what amount of its trash is in circulation, but it is said to be very considerable. Every man who holds any of it will, of course, lose it. This is a severe remedy, but it is one that will be sure to work a cure.

The stock of the broken United States Bank is still gradually getting lower in price. The last quoted was \$5.75 for the share of \$100, which is just \$5.75 more than it is worth.

The shipments of specie from New York continue to increase in amount. The Philadelphia Ledger of 24th says—"It is now ascertained that the amount that will leave that city in all this week will not fall short of one million of dollars! The consequence already

is a difference between specie and currency there of  $\frac{3}{4}$  to  $1\frac{1}{2}$  per cent. "—About \$300,000 left the Merchant's Bank on Wednesday for that destination [China.] Large drafts were also made on other banks to go by the Louis Philippe, for Havre, on the 24th, and nearly \$300,000, it is stated, are already engaged to go by the Great Western."

The exportation of specie has been going on for some weeks past, and this week much more liberally than at any time before. We presume the same tendency will continue through next month, and perhaps longer. It would not be strange if five millions should go off, clearing the market of the quantities of Mexican dollars and other silver which is held merely as merchandize, and perhaps drawing from the banks most of their American half dollars at a premium of a half to one per cent. The banks have a large amount of gold, which is not wanted for exportation at the present rates of exchange, and is not likely to be called for. The banks therefore are not called upon for specie to supply the foreign demand, by the presentation of claims upon them. The operation now going on is altogether healthy, for specie had accumulated here until it had become burthensome.—*New York Jour. Com.*

The specie shipped in masses last week was as follows:

Gladiator for London	- - -	\$230,000
Louis Philippe for Havre	- - -	316,000
Great Western for Bristol	- - -	271,340
Akbar for Canton via Liverpool	- - -	250,000

\$1,097,340

An injunction served upon the Commercial Bank of New York city, by the Commissioners, closed its doors on Monday. Cause, overtrading, or lent too large an amount to persons connected with its management.—(*Phil. Led.*) It is understood that the assets of the bank are now sufficient to render its debts safe, but not to leave much for the stockholders. This was a safety fund bank. Its capital was \$500,000. Its circulation 1st January last, was \$121,370.—*Jour. Com.*

The Herkimer County Bank (New York) has been robbed by Anson C. Brown, the book-keeper of the bank, of more than \$70,000. The financier escaped with the proceeds of his "operations," but was soon pursued, and his capture expected. [He has since been taken, and nearly all the money recovered.]

The cause of the depreciation of Wheeling bank-notes, so much below those of the other bank notes of Virginia, has been a mystery. We had no doubt but they are just as good as the others—or to speak more correctly, that all the others are as bad as those of Wheeling. But though not able to fathom the mystery, we were sure that the Wheeling banks were in some way making an extra profit by the extra depreciation of their notes. The following article from the Argus, a paper published in Wheeling, may serve to throw some light on the subject. After having announced in a previous paper, the departure of Messrs. Brady and List, the cashiers of the two Wheeling banks, the Argus of the 23d adds—"We have been informed that the cause of the above gentlemen's departure, was to make some arrangements in Richmond, to bring the value of their paper to a par with the banks of that city. Then, as we before said, "may not an appreciation in the value of their paper be expected?" We hope so. Since writing the above, we have received further information, that the principal business of this delegation is to sell specie—two stage loads of which our informant says, they took with them. Banks can ship off, and speculate in specie; at the same time, farmers and mechanics must receive and put up with "skin plasters" and depreciated currency, for their sweat and toil."

In the mean time, the Wheeling notes will make a large part of the revenue, and the treasury will lose the amount of depreciation. We trust the loss may be as great as possible, so that the people of Virginia may no longer submit to be securities general for all the banks of the state. The greater the loss suffered now, the greater will be the saving hereafter. A bankrupt treasury, caused by bankrupt banks, would now be a blessing, compared to the continuance of the permanence of the fraudulent paper system, upheld by state securityship.

*Resumption! Resumption! !*—This cry is beginning to be heard, and it is full time that it should be. Some of the banks profess to be able to resume; then, if they do not resume, they are guilty of *dishonesty*, and the people must not rest satisfied until they are punished.—*Baltimore Republican.*

The Richmond Enquirer, says.—"The whole banking system in the states must be radically reformed. The suspended institutions (we mean, those that are not bankrupt,) must resume specie payments, by a wise concert and at as early a day as is practicable."

Friday, October 8, 1841.

According to the report of Mr. Ewing, the late secretary of the treasury, the sum of \$319,318 remains due from the United States Bank to the treasury of the United States. (*Senate Document, No 121.*)

Judge McLean of Ohio has declined the appointment of secretary of war, and J. C. Spencer of New York has been appointed to, and has accepted the place. All the other persons recently nominated for the cabinet have accepted, and all are at Washington, except A. P. Upsher of Virginia, secretary of the navy, and Ch. Wickliffe of Kentucky, postmaster general. The former is detained at home by the illness of his brother. It is understood that all the new members of the cabinet (who form the whole, except the state department,) are opposed to the establishment of a national bank.

It is yet a matter in dispute whether the kidnapping of the Canadian "patriot" or incendiary, Grogan, from within the United States line, was by military authority, or by unauthorized volunteers. Grogan is still in jail in Montreal. His case is before the government, and he will no doubt be demanded and released.

Samuel S. Fitch, a merchant of Philadelphia, supposed to be worth between one and two hundred thousand dollars, has been arrested for forgery, alleged to have been committed 17 years ago.

The trial of McLeod has been commenced, at Utica.

The great swindler who lately got \$26,000 by a forged draft on the Browns of New York, and as much on another house, has been discovered and arrested. He is, or had passed for, a Col. Monroe Edwards, of Iberville, Louisiana, and is a native of Kentucky. \$44,000 of the money has been recovered. He had been playing the character of abolitionist on a grand scale, and attempting to swindle the leaders of that sect, which attempt led to his detection. He was arrested in Philadelphia.

We understand that the crops on the plantations along the Savannah are seriously injured by the late freshet. The corn crops generally in Beach Island are destroyed.—*Georgia paper.*

The ship Shenandoah arrived at Philadelphia on Monday night, bringing accounts 5 days later (to 9th of September,) from England. No news of importance.

During the last week, 5 failures had occurred in Manchester, to the amount of £300,000.

By the last accounts from Canton, the emperor of China continued determined to yield nothing to the

demands of the British government, and was putting to death his commanders for ill success, and his counsellors for advising peace.

L. S. Cornwell, a clerk in the State Bank of Illinois has been detected in a "defalcation" effected by making false entries in the accounts. This is quite a small affair—only \$800 taken before detection. As usual, the highly respectable clerk was bailed, and is off—probably for Texas.

Sundry of the northern newspaper editors are much at a loss as to what sins of authorship to charge upon Judge Upshur, the new secretary of the Navy. We will tell them. He is the author of "A Brief Enquiry into the true nature, &c. of our Federal Constitution," which volume is a most able exposition and maintenance of state-rights doctrines, and to refute which, or even to impair the force of the argument, would greatly perplex any one, or all, of those who are so anxious to fix some charge upon this "Virginia abstractionist" and stout defender of strict construction and state rights.

By the steamer Acadia, arrived at Boston, London accounts are brought to September 18th.

The harvest had been secured, except in the northern part of the island, and prices were rather lower. The average prices of wheat, as stated on September 10 were for week ending July 24—68s. 3d. per quarter.

"	"	"	31-70	5	"	"
"	"	"	Aug. 7-72	5	"	"
"	"	"	"	14-74	7	"
"	"	"	"	21-76	1	"
"	"	"	"	28-74	1	"

Aggregate 72s. 8d. making the duty 2s. 8d. per quarter. The next week reduced the duty to low-st point viz. 1s. per quarter. The speculators will succeed completely.—*Jour. Com.*

An unsuccessful attempt had been made in Paris to assassinate the Duc d'Aumale, one of the sons of the king of France.

A serious popular disturbance had occurred at Clermont in Auvergne, and several of the military had been killed by the rioters.

The harvest was finished in France, the product considered a fair average.

*A noble compliment.*—We understand that the citizens of Woodford have purchased the fine farm, in that county, on which the Hon. J. J. Crittenden was born, and made him a present of it. The price paid was \$17,000.—*Louisville Journal.*

The iron steam-ship, now building at Bristol, (Eng.) will measure 3600 tons. The iron, (all wrought,) is more than half an inch thick. The steamer will cost something like \$500,000. It will have 5 masts, and 4 engines of 300 horse power each.

Friday, October 15, 1841.

Grogan has been released from prison in Montreal, and brought to and dismissed at the United States line, by the Canadian authorities, on requisition of the United States government.

A collision of two trains, meeting in rapid progress, took place on the Western Rail road, (Mass.) Two locomotives and several passenger cars were completely smashed, and nearly 40 persons severely injured. Three have since died, and others expected to die, from injuries received.

Gen. Samuel Houston, the vulgar blackguard and rowdy, and notorious common drunkard, has been again elected, and from private life, president of Texas. This is a strong indication of the low state of manners and morals in this young republic.

The great forger and financier, Col. Monroe Edwards, alias John P. Caldwell, has been removed to

New York for trial, by requisition of the executive of New York.

The general elections for Maryland and for Georgia have just been concluded, and in both the democratic party have gained the victory. Francis Thomas has been elected governor of Maryland, and Gov. McDonald re-elected in Georgia. The election in Maryland was made to turn on the resumption of specie payments by the banks, the candidates of the successful party having *promised* to vote for resumption. We hope, (*but cannot yet trust,*) that the promises and pledges to this end may be of more stability and worth than heretofore on this subject, from that party. At any rate, the fact is gratifying that to that *pledge* the successful party owed their recent success. In Georgia, it may be inferred that the same question of resumption or non-resumption operated on the election; for we learn from the Augusta Chronicle (whig paper,) that "already has the dread of such an event had such an effect upon our currency, that to day [Oct. 9] it has been *impossible to sell the bills of the Central Bank at any discount.*" This (to us) gratifying result could only be founded on the expected compulsory "winding up" or otherwise "blowing up" of such rotten banks.

The bark Amanda, from Limerick, bound to Quebec, was wrecked on Little Metis Point on the 26th ult. Twenty-nine passengers, and 12 (out of 18) of the crew were drowned.

"In all sections of the country, the community has become aroused to the iniquities of the banking system, as practised both by the late National Bank and the State Banks. In Georgia, Mississippi and Michigan already a strong movement has been made to clear the markets of the depreciated paper of the suspended banks. And in the last mentioned state, so successful have been the efforts of the people, that no banks exist in that state, and the currency is as sound as any in the union. A similar movement is going forward in Ohio with every prospect of the most eminent success. In that state there are now 30 banks, the charters of which nearly all expire in January, 1843, and the legislature of next winter will be called upon to decide on their recharter. The present charters are nearly all forfeited by their suspension, and the indications are that they can in no case be renewed, more especially as the operations of the bankrupt law during the next year, will deprive them of a large portion of their assets. The instant those fraudulently suspended banks are wound up, a sound currency will flow in upon the people, and put an end to the fluctuation in exchanges, and the extortions that they now suffer."—*Money Article, New York Her.*

Bellville, the splendid mansion house of Mrs. Mayo, near Richmond, was burnt last Friday night.

By this morning's mails, (Oct. 15th.)

From the Utica Observer of Oct. 12, we learn that the trial of McLeod was then still undecided. There seems however no longer any doubt as to his being acquitted. There was conclusive evidence that McLeod was not present at the attack on the Caroline.

The king of financiers, Col. Monroe Edwards, has been operating in England, and has got £250 out of Lord Spencer by means of a forged letter of introduction from Daniel Webster, and by forged securities. Col. Edwards concentrates in himself the business talents of Nicholas Biddle and all the directories of all the existing swindling banks put together. If he had been president of the late United States Bank, it would still have been in triumphant progress and in good repute; and President Edwards would have been deemed a still greater man and more a public benefactor, than was President Biddle.

Fresh fish (turbot) was served up at Pearl street House, Boston, brought from England in the Acadia.

The National Intelligencer (bankite) of yesterday, says—"The Baltimore Republican ascribes the late triumph of its party in Maryland, to 'the two vetoes.' This we do not deny." This is excellent authority in such a case; and it shows that the president's vetoes have operated indirectly, to reform the swindling and rotten banking system in general, as well as to prevent one particular branch of it being again connected with, and fixed upon the federal government.

The New York Herald of the 13th announces positively upon certain, though secret information, that McLeod, had been acquitted. "Secret and confidential information" of the verdict of a jury is something new under the sun. We have no doubt of the truth of the acquittal of McLeod, but believe that the Herald anticipated it by such inferences as any person might as well draw, and not by knowing a passed result.

Last sales (or report of sales) of United States Bank stock in Philadelphia (October 13,) at 54. In New York "entirely unsaleable, and should be struck off the list," says the "Money Article" of the New York Herald. Having in our summaries noted its downward progress thus to nothing, or to the mere nominal and fictitious rate of speculators, we now bid farewell to this remnant of political iniquity, wide-spread fraud and plunder, and colossal engine of corruption of public and private morals.

Friday, Oct. 22, 1841.

As anticipated in our last week's summary, McLeod was acquitted by the jury almost as soon as the case was referred to their decision. There was no popular outbreak, nor the least ground of fear from that source to the prisoner, who was immediately released, and remained unguarded, and perfectly safe from all offence.

Young Semmes, charged with the murder of Prof. Davis, and bailed for \$25,000, has failed to appear to take his trial. The next thing to be expected is that some flaw will be found in the bail bond, or other part of the procedure, and the criminal will not even pay the money price of blood. This bail process is a shameful part of the very defective criminal law of Virginia.

A slave plot for insurrection, near Purysburg, was discovered in South Carolina a few days ago. Nine of those concerned were arrested, four of whom, it is said, will be hung.

**Millington Bank.**—We learn from the Baltimore Sun that Mr. Ellis, president of that swindling concern, the Millington Bank, was tried last week at Chestertown, Md., and convicted. He was placed in prison after his conviction, and a motion for a new trial made by his counsel prevailed, and his trial is to take place at the next term. The charges against him are aiding and abetting in swindling, &c., while president of the Millington Bank.

**Redfield.**—Mr. Redfield, cashier of the Commercial Bank, New York, lately enjoined, has been ascertained to be a defaulter to the amount of \$56,000. As usual, Mr. Redfield was a gentleman of the highest character and respectability.

The elections in Pennsylvania, as well as those of Maryland and Georgia, have gone decidedly in favor of the democratic party, claiming to be the anti-fraudulent paper money party, and the contest there has turned, and the victory has been gained, as in Maryland and Georgia, on the question of bank resumption of specie payments. We earnestly hope, but in

great fear of the reverse, that the successful party will redeem the pledge thus given.

As one of the striking "signs of the times" the National Gazette of Philadelphia, one of the most able and thorough bankite papers, has taken new ground, and on the above subject utters such language as the following:

"The Baltimore Clipper, speaking of the result of the late election in Maryland, claims for the whigs a majority in the Senate, and expresses the belief, that no opposition will be offered by that body to any measures which may be proposed by the [lower] house, touching the finances of the state; the public debt, regulation of the banks, &c. It adds, 'It is now generally understood, that the banks will be compelled to resume specie payments; to which we suppose there will be little objection by either party, as that measure had its influence in producing the result at the election which has just terminated.'

"The banks cannot fail to perceive that the questions of resumption and a sound currency are becoming paramount to all others with the people. *Political contests are determined upon them, and the party that advocates or upholds the banks in their present course is overthrown.* So unpopular is this prolonged bank suspension becoming, that ere long there will be "none so poor as to do them reverence," if they persevere in it. We see daily evidences that the people are resolved not to tolerate the existing state of things connected with the circulating medium much longer.

"The people are becoming dissatisfied with the conduct of corporate institutions, or what may more properly be termed *monopolies*. The opinion is obtaining very extensively, that it is far better to abolish bank charters, and leave the business of banking open and free to every one who chooses to engage in it. *We fully concur in these opinions.* At another time we shall go fully into this subject."—*Nat. Gaz.*

There was some drawing of specie from the debtor banks to-day for remittance, and the amount shipped will not be far from \$500,000. The Wellington has on board for London \$208,000. This is a mere trifle, however, and will in no wise inconvenience the banks, which are overflowing with specie, and must continue so to be, while the specie of the whole union is driven here by the irredeemable currency of the south and west. The people of those sections continue to prefer the depreciated paper of fraudulently insolvent banks to the currency of the constitution. The consequence is that New York having a superfluity of specie, it goes to Europe, because it is more in demand there than in those states where the community reject it in favor of bank rags; at the same time they complain of what they call high rates of exchange. Nearly \$50,000 arrived here yesterday from New Orleans, where the people tolerate the shinplasters.—*Money Article of N. Y. Her.*

**Currency and Business.**—The New York Sun, a neutral paper, has the following very just remarks with regard to the effect on currency and business of a defeat of the [national] bank bill. It says:

"As regards the effect upon currency and business, it will be nothing at all. As we have repeatedly shown, the currency and exchanges are regulating themselves much more effectually and soundly than any bank could regulate them, and trade is reviving as rapidly as the laws by which it is and must be governed will sanction. Had a bank been created, it would have made endless mischief. Having escaped this danger, business will go on, as it has been going on, in its steady, regular and natural channels. Such, as far we can learn, are the opinions of the discreet and honest men of all parties."

**From Florida.**—The St. Augustine News, of the 5th inst., contains advices from Tampa to the 1st. On the 6th, Col. Worth was to ship from 250 to 300 Indians westward, of whom 95 were warriors. There



are still marauding parties straggling through the interior, occasionally murdering those whom they may chance to encounter.

The East College, at Williamstown, N. J., was destroyed by fire on Sunday last. The building was 100 feet long, 40 wide, and 4 stories high.

*Another explosion.*—An explosion, it appears, has just occurred in the Morris Canal Barking Company, which has caused the company to remove both the president and vice president of the concern, E. R. Biddle and E. Lord. The reason for this act is stated in the newspapers to be, that these officers had loaned their friends or themselves \$180,000 of the funds of the bank, to establish or improve certain iron works in Danville and Wilkesbarre, besides various other financial operations. The Directors called upon them to resign; they refused, and were accordingly turned out.—*Phil. Ledger.*

*Female industry in Massachusetts.*—The number of females employed in Massachusetts is 49,000, of whom about 24,000, are in the woollen factories. The aggregate amount of their earnings, annually, is estimated at \$4,000,000.—*Ph. Ledger.*

Friday, Oct. 29, 1841.

The steamer Columbia arrived at Boston on the 21st, bringing accounts 16 days later from England, and to 5th inst.

The consideration of the corn law by parliament had been postponed to next session, which will begin in February, 1842. A loan of £3,000,000 had been voted and advertised for.

Trade continues to remain in a very depressed state in England, and the sufferings of the operatives are excessive in consequence.

An arrival direct from Canton brings important news. The city has been bombarded by the British squadron—40 war junks of the Chinese blown up, several thousands of the Chinese troops killed, and negotiations again entered upon. \$6,000,000 had been offered to the British commander for the ransom of Canton.

John Forsyth, of Georgia, late secretary of state, died on the 21st, at Washington.

Two of the great financiers, Hassinger and Wright, are under trial in Philadelphia for swindling. They were the president and secretary of the Norristown Railroad Company, and, as usual, men of the highest respectability. Their joint operation was committed long ago. It consisted in fraudulent issues of certificates of loan and stock of the company for about \$250,000.

The London packet Quebec, which sailed from New York for London on October 25, took \$272,000 in specie.

Orders have been given to build three more war steamers—one at Norfolk, to be propelled on Lieut. Hunter's plan of paddle wheels, one at Philadelphia, on Capt. Stockton's plan, and one at New York.

By later accounts from Canton, (kept back for the purpose of speculation,) it appears that the articles between the commanders had been agreed upon, and that the ransom of six millions of dollars had been paid by the Chinese.

It is said that the North Am. Trust and Banking Co. paid its lawyer ten thousand dollars for drawing up its articles of agreement; and that the Commercial Bank has been in the practice of helping its balance with the other Banks by handing over every morning the checks of certain brokers to the amount of fifty or sixty thousand dollars. These checks were procured in exchange for an equal amount of Commercial Bank notes, which were paid out at the brokers' counters during the day, and the brokers allowed a commission.

The Havre packet, Iowa, carries out from New York, \$82,000 of specie.

*Another defalcation.*—We are informed, from the proper source, that Mr. Sylvester Spencer, who for many years past has had charge of the pension office attached to the Mechanics' Bank in this city, turns out to be a defaulter to the amount of about \$11,000. The president of the Mechanics' Bank has promptly caused Mr. Spencer to be committed.—*Journ. Com.*

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# THE FARMERS' REGISTER.

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EDMUND RUFFIN, EDITOR AND PROPRIETOR.

## OF PRUNING.

From Lindley's Horticulture.

The quantity of timber that a tree forms, the amount and quality of its secretions, the brilliancy of its colors, the size of its flowers, and, in short, its whole beauty depend upon the action of its branches and leaves, and their healthiness. The object of the pruner is to diminish the number of leaves and branches; whence it may be at once understood how delicate are the operations he has to practise, and how thorough a knowledge he ought to possess of all the laws which regulate the action of the organs of vegetation. If well directed, pruning is one of the most useful, and, if ill-directed, it is among the most mischievous, operations that can take place upon a plant.

When a portion of a healthy plant is cut off, all that sap which would have been expended in supporting the part removed is directed into the parts which remain, and more especially into those in the immediate vicinity of it. Thus, if the leading bud of a growing branch is stopped, the lateral buds, which would otherwise have been dormant, are made to sprout forth; and, if a growing branch is shortened, then the very lowest buds, which seldom push, are brought into action: hence the necessity, in pruning, of cutting a useless branch clean out; otherwise the removal of one branch is only the cause of the production of a great many others. This effect of stopping does not always take place immediately; sometimes its first effect is to cause an accumulation of sap in a branch, which directs itself to the remaining buds, and organizes them against a future year. In ordinary cases, it is thus that spurs or short bearing-branches are obtained in great abundance. The growers of the filbert, in Kent, procure in this way greater quantities of bearing wood than nature unassisted would produce; for, as the filbert is always borne by the wood of a previous year, it is desirable that every bush should have as much of that wood as can be obtained, for which every thing else may be sacrificed; and such wood is readily secured by observing a continual system of shortening a young branch by two thirds, the effect of which is to call all its lower buds into growth the succeeding year; and thus each shoot of bearing wood is compelled to produce many others. The peach, by a somewhat similar system, has been made to bear fruit in unfavorable climates (*Hort. Trans.*, ii. 366); and every gardener knows how universally it is applied to the pear, apple, plum, and similar trees.\*

\* [Nothing is more general, of late years, than complaints of the short period of productiveness in the peach tree, throughout the middle states. Although this is often owing to the worm, which girdles the tree at the root, yet the almost total neglect of pruning is a frequent cause of sterility and decay. When left to itself the interior of the head of the tree becomes filled with small dead branches, and the trunk and larger limbs bark-bound and moss-covered; the whole tree is enfeebled; leaves are only produced at the extremity of the long branches, and the fruit borne, if

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Even the fig-tree has thus been rendered much more fruitful than by any other method. Whenever," says Mr. Knight, "a branch of this tree appears to be extending with too much luxuriance, its point, at the tenth or twelfth leaf, is pressed between the finger and thumb, without letting the nails come in contact with the bark, till the soft succulent substance is felt to yield to the pressure. Such branch, in consequence, ceases subsequently to elongate; and the sap is repulsed, to be expended where it is more wanted. A fruit ripens at the base of each leaf, and during the period in which the fruit is ripening, one or more of the lateral buds shoot, and is subsequently subjected to the same treatment, with the same result. When I have suffered such shoots to extend freely to their natural length, I have found that a small part of them only became productive, either in the same or the ensuing season, though I have seen that their buds obviously contained blossoms. I made several experiments to obtain fruit in the following spring from other parts of such branches, which were not successful: but I ultimately found that bending these branches, as far as could be done without danger of breaking them, rendered them extremely fruitful; and, in the present spring, thirteen figs ripened perfectly upon a branch of this kind within the space of ten inches. In training, the ends of all the shoots have been made, as far as practicable, to point downwards." (*Hort. Trans.*, iv. 201.)

The effect produced upon one part by the abstraction of some other part, thus shown in the development of buds which would otherwise be dormant, is seen in many other ways. If all the fruit of a plant is abstracted one year when just forming, the fruit will be finer and more abundant the succeeding year, as happens when late frosts destroy our crops.\* If of many flowers one only is left, that one, fed by the sap intended for the others, becomes so much finer. If the late figs, which never ripen, are abstracted, the early figs the next year are more numerous and larger. If of two unequal branches, the stronger is shorten-

any, is comparatively worthless. By pursuing the practice recommended in the text, the trees may be preserved for a long time in a high state of vigor and productiveness. A. J. D.]

\* [The apple trees, in this country, very commonly bear enormous crops every other year; and the orchardist finds himself nearly destitute of fruit one season, while his trees on the following year are nearly breaking down beneath their load. The excessive fecundity of one season so exhausts the tree that it requires another whole season for recovery. A certain and uniform crop may be obtained every year, by thinning out one-half or two-thirds of the apples when they have attained about one-fourth of their usual size. The remainder will grow to greater perfection than if all were left; while the tree, having produced only a moderate crop, will bear again the succeeding year. When this practice has been pursued for some years with trees that have just fairly commenced bearing, it often happens that they will afterwards produce moderate annual crops if left to themselves. A. J. D.]

ed and stopped in its growth, the other becomes stronger ; and this is one of the most useful facts connected with pruning, because it enables a skilful cultivator to equalize the rate of growth of all parts of a tree ; and, as has been already stated, this is of the greatest consequence in the operation of budding. In fact, the utility of the practice, so common in the management of fruit trees when very young, turns entirely upon this. A seedling-tree has a hundred buds to support, and consequently the stem grows slowly, and the plant becomes bushy-headed : but, being cut down so as to leave only two or three buds, they spring upwards with great vigor, and, being reduced eventually to one, as happens practically, that one receives all the sap, which would otherwise be diverted into a hundred buds, and thrives accordingly, the bushy head being no longer found, but a clean straight stem instead. In the oak and the Spanish chestnut this is particularly conspicuous.

Nothing is more strictly to be guarded against than the disposition to *bleed*, which occurs in some plants when pruned, and to such an extent as to threaten them with death. In the vine, in milky plants, and in most climbers or twiners, this is particularly conspicuous ; and it is not unfrequently observed in fruit trees with gummy or mucilaginous secretions, such as the plum, the peach, and other stone fruits. This property usually arises from the larger size of the vessels through which sap is propelled at the periods of early growths, which vessels are unable, when cut through, to collapse sufficiently to close their own apertures, when they necessarily pour forth their fluid contents as long as the roots continue to absorb them from the soil. If this is allowed to continue, the system becomes so exhausted as to be unable to recover from the shock, and the plant will either become very unhealthy, or will die.\* The only mode of avoiding it is to take care never to wound such trees at the time when their sap first begins to flow ; after a time, the demand upon the system by the leaves becomes so great that there is no surplus, and therefore bleeding does not take place when a wound is inflicted.†

All these things show how extremely necessary it is to perform the operations of pruning with care and discretion. But in addition to the general facts already mentioned, there are others of a more special kind that require attention. The

\* [A solution of gum shellac in alcohol, of the consistence of thin paste (put on with a brush), is an admirable application to wounds of stone-fruit trees, and others, which are disposed to bleed profusely. It is readily applied, adheres closely, excludes the air completely, and is less offensive to the eye than large plasters of clay, composition, &c. A. J. D.]

† "The vine often bleeds excessively when pruned in an improper season, or when accidentally wounded ; and, I believe, no mode of stopping the flow of the sap is at present known to gardeners. I therefore mention the following, which I discovered many years ago, and have always practised with success :—If to four parts of scraped cheese be added one part of calcined oyster shells, or other pure calcareous earth, and this composition be pressed strongly into the pores of the wood, the sap will instantly cease to flow ; so that the largest branch may, of course, be taken off at any season with safety." (Knight, in *Hort. Trans.*, i. 102.)

first thing to be thought of is the peculiar nature of the plant under operation, and the manner in which its special habits may render a special mode of pruning necessary. For example, the fruit of the fig and walnut is borne by the wood of the same season ; that of the vine and filbert by that of the second season ; and pears, apples, &c., by wood of some years' growth ; it is clear that plants of these three kinds will each require a distinct plan of pruning for fruit.

The pruner has frequently no other object in view than that of thinning the branches so as to allow the free access of light and air to the fruit ; and if this purpose is wisely followed, by merely removing superfluous foliage, the end attained is highly useful ; it is clear, however, that in order to arrive at this end, without committing injury to the tree which is operated on, it is indispensable that its exact mode of bearing fruit should be in the first instance clearly ascertained.

The period of ripening fruit is sometimes changed by skilful pruning, as in the case of the raspberry, which may be made to bear a second crop of fruit in the autumn, after the first crop has been gathered. In order to effect this, the strongest canes, which in the ordinary course of things would bear a quantity of fruiting twigs, are cut down to within two or three eyes of the base ; the laterals thus produced, being impelled into rapid growth by an exuberance of sap, are unable to form their fruit buds so early as those twigs in which excessive growth is not thus produced ; and, consequently, while the latter fruit at one season, the others cannot reach a bearing state till some weeks later. Autumnal crops of summer roses, and of strawberries, have been sometimes procured by the destruction of the usual crop at a very early period of the season ; the sap intended to nourish the flower buds destroyed is, after their removal, expended in forming new flower buds, which make their appearance at a later part of the year.

The season for pruning is usually midwinter, or at midsummer ; the latter for the purpose of removing new superfluous branches, the former for thinning and arranging the several parts of a tree. It is, however, the practice, occasionally, to perform what is called the winter pruning early in the autumn, as in the case of the gooseberry, and of the vine when weak ; and the effect is found to be, that the shoots of such plants, in the succeeding season, are stronger than they would have been had the pruning been performed at a much later season. This is necessarily so, as a little reflection will show. \* \* \* \* \*

With regard to pruning plants when transplanted, there can be no doubt that it is more frequently injurious than beneficial. It is supposed, or seems to be, that when the branches of a transplanted tree are headed back, the remaining buds will break with more force than if the pruning had not been performed. \* \* \* \* \* Its roots are not fully in action, but from the injuries sustained in removing they are capable of exercising but little influence on the branches. The great point to attain, in the first instance, is the renovation of the roots, and that will happen only in proportion to the healthy action of the leaves and buds : if, therefore, the branches of a plant are removed by the pruning knife, a great obstacle is opposed to this renovation ; but, if they remain,



new roots will be formed in proportion to their healthy action. The danger to be feared is, that the perspiration of the leaves may be so great as to exhaust the system of its fluid contents faster than the roots can restore them, and in careless transplanting this may doubtless happen: in such cases it is certainly requisite that some part of the branches should be pruned away; but no more should be taken off than the exigency of the case obviously requires; and, if the operation of transplanting has been well performed, there will be no necessity whatever. In the case of the transplantation of large trees, it is alleged that branches must be removed, in order to reduce the head, so that it may not be acted upon by the wind; but in general it is easy to prevent this action by artificial means.

In the nurseries it is a universal practice to prune the roots of transplanted trees; in gardens, this is as seldom performed. Which is right? If a wounded or bruised root is allowed to remain upon a transplanted tree, it is apt to decay, and this disease may spread to neighboring parts, which would otherwise be healthy; to remove the wounded parts of roots is therefore desirable. But the case is different with healthy roots. We must remember that every healthy and unmutated root which is removed is a loss of nutriment to the plant, and that too at a time when it is least able to spare it; and there cannot be any advantage in the removal. The nursery practice is probably intended to render the operation of transplanting large numbers of plants less troublesome; and, as it is chiefly applied to seedlings and young plants with a superabundance of roots, the loss in their case is not so much felt. If performed at all, it should take place in the autumn, for at that time the roots, like the other parts of a plant, are comparatively empty of fluid; but, if deferred till the spring, then the roots are all distended with fluid, which has been collecting in them during winter, and every part taken away carries with it a portion of that nurture which the plant had been laying up as the store upon which to commence its renewed growth.

It must now be obvious that, although root-pruning may be prejudicial in transplanting trees, it may be of the greatest service to such established trees as are too prone to produce branches and leaves, instead of flowers and fruit. In these cases the excessive vigor is at once stopped by removal of some of the stronger roots, and consequently of a part of the superfluous food to which their "rankness" is owing. The operation has been successfully performed on the wall trees at Oulton, by Mr. Errington, one of our best English gardeners, and by many others, and, I believe, has never proved an objectionable practice under judicious management. Its effect is, *pro tanto*, to cut off the supply of food, and thus to arrest the rapid growth of the branches; and the connexion between this and the production of fruit has already been explained. It is by pushing the root-pruning to excess that the Chinese obtain the curious dwarf trees which excite so much curiosity in Europe. Mr. Livingston's account of their practice is so instructive, and contains so much that an intelligent gardener may turn to account, that I think it worth repeating here.

"When the dwarfing process is intended, the branch which had pushed radicles into the sur-

rounding composition in sufficient abundance, and for a sufficient length of time, is separated from the tree, and planted in a shallow earthenware flower-pot, of an oblong square shape; it is sometimes made to rest upon a flat stone. The pot is then filled with small pieces of alluvial clay, which in the neighborhood of Canton is broken into bits, of about the size of common beans, being just sufficient to supply the scanty nourishment which the particular nature of the tree and the process require. In addition to a careful regulation of the quantity and quality of the earth, the quantity of water, and the management of the plants with respect to sun and shade, recourse is had to a great variety of mechanical contrivances, to produce the desired shape. The containing flower-pot is so narrow, that the roots pushing out towards the sides are pretty effectually cramped. No radicle can descend; consequently it is only those which run towards the sides or upwards that can serve to convey nourishment properly, and it is easy to regulate those by cutting, burning, &c., so as to cramp the growth at pleasure. Every succeeding formation of leaves becomes more and more stunted,—the buds and radicles become diminished in the same proportion,—till at length that balance between the roots and leaves is obtained which suits the character of the dwarf required. In some trees this is accomplished in two or three years, but in others it requires at least twenty years." (*Hort. Trans.*, iv. 229.)

We have still to consider that peculiar kind of pruning which is technically called *ringing*. This consists in removing from a branch one or more rings of bark, by which the return of sap from the extremities is obstructed, and it is compelled to accumulate above the ring. Mr. Knight explains the physiological nature of the operation so well, that I cannot do better than quote his words.

"The true sap of trees is wholly generated in their leaves, from which it descends through their bark to the extremities of their roots, depositing in its course the matter which is successively added to the tree; whilst whatever portion of such sap is not thus expended sinks into the alburnum, and joins the ascending current, to which it communicates powers not possessed by the recently absorbed fluid. When the course of the descending current is intercepted, that naturally stagnates and accumulates above the decorticated space; whence it is repulsed and carried upwards, to be expended in an increased production of blossoms, and of fruit: and, consistently with these conclusions, I have found that part of the alburnum which is situated above the decorticated space to exceed in specific gravity, very considerably, that which lies below it. The repulsion of the descending fluid, therefore, accounts, I conceive, satisfactorily, for the increased production of blossoms, and more rapid growth of the fruit upon the decorticated branch: but there are causes which operate in promoting its more early maturity. The part of the branch which is below the decorticated space is ill supplied with nutriment, and ceases almost to grow; it in consequence operates less actively in impelling the ascending current of sap, which must also be impeded in its progress through the decorticated space. The parts which are above it must, therefore, be less abundantly



supplied with moisture; and drought, in such cases, always operates very powerfully in accelerating maturity. When the branch is small, or the space from which the bark has been taken off is considerable, it almost always operates in excess; and a morbid state of early maturity is induced, and the fruit is worthless.

"If this view of the effects of partial decortication or ringing, be a just one, it follows that much of the success of the operation must be dependent upon the selection of proper seasons, and upon the mode of performing it being well adapted to the object of the operator. If that be the production of blossoms, or the means of making the blossoms set more freely, the ring of bark should be taken off early in the summer preceding the period at which blossoms are required: but, if the enlargement and more early maturity of the fruit be the objects, the operation should be delayed till the bark will readily part from the alburnum in the spring. The breadth of the decorticated space must be adapted to the size of the branch; but I have never witnessed any except injurious effects, whenever the experiment has been made upon very small or very young branches, for such become debilitated and sickly, long before the fruit can acquire a proper state of maturity."

The effects of ringing in altering the appearance of the fruit is very striking. In the *Horticultural Transactions*, iii. 367, the following cases are reported:—In a French crab, the fruit, by ringing, was increased to more than double the size, and the color of it was much brightened. In a Minshull crab the size was not increased, but the appearance of the apple was so improved as to make it truly beautiful; its colors, both red and yellow, were very bright. In the courtpendu apple the improvement was still more conspicuous, the colors being changed from green and dull red, to brilliant yellow and scarlet. Many others of a similar kind are to be found recorded in books on horticulture. It is, however, by no means alone to the maturation or production of fruit that this operation is applicable; it will, of course, induce also the production of flowers, and it has occasionally been used for that purpose, as in the camellia. It is best performed in the early spring, when the bark first separates freely from the wood.

This operation has, however, the disadvantage of wounding a branch severely; and, if performed extensively upon a tree, it is very apt, if not to kill it, at least to render it incurably unhealthy; for if the rings are not sufficiently wide to cut off all communication between the upper and lower lips of the wound they produce little effect, and if they are they are difficult to heal. For these reasons the operation is but little employed, other means being used instead. By some persons ligatures are made use of, and they would be preferable if they answered the purpose of obstructing the sap to the same extent as the abstraction of a ring of bark. In Malta, one of the objects of ringing, that of advancing the maturation of the fruit, is practised upon the zinzibey, or jujube tree, by merely fixing in the fork of a branch a very heavy stone, made fast with bandages; its weight forces the branches a little into a horizontal direction, and thus, independently of the pressure it exercises upon the parts it touches, obstructs the free circulation of the sap.

#### MANURE APPLIED TO THE SURFACE.

To the Editor of the Farmers' Register.

South Carolina, Oct. 19th, 1941.

Having lately made a report to the Agricultural Society of the district in which I reside, in which I stated my belief that the surface application of manures, especially to the corn crop after it is up, to be covered by the first working, was decidedly preferable to any other mode of applying it, the derisive stare of incredulity was plainly legible upon several countenances. Not that any seemed to doubt that I believed so, but a very large majority of the gentlemen present disbelieved the fact itself.

In the report I detailed and experiment of my own made in 1838, the result of which was sufficient to satisfy the most skeptical, had they witnessed it, and which, of itself, was abundantly so to justify me in coming to the conclusions I did, I also, in support of my opinion, made some extracts from an article in a number (10) of the second volume of the Register, pp. 643-4, over the signature of J. M. G., which, if I am not greatly mistaken as to who the writer was, is surely good authority with the whole reading agricultural community. Will he please to inform us through the Register whether he has made any further experiments, and what his present opinion is on that subject?

I happened to have only the number of the volume in which his article appeared, nor have I any volume of earlier date than the sixth, or I might in all probability find corroborative testimony from other writers, or from J. M. G. himself. My 6th, 7th, and 8th volumes are at the binder's, consequently I cannot refer to them. But in the last number of the Register, I had the satisfaction of finding, in the extracts from Gen. Emory's Address, the very thing, of all others, I most desired to see. He says, (after giving an account of some experiments in turning in the oat crop in its green state,) "I do not expect to have my opinion changed, and expect confidently to remain where I now am, and have been for a long time, a firm believer in the propriety of surface manuring rather than turning it under. I have never been disappointed in weeds or other manure spread upon the surface and allowed to decompose there, and thus become absorbed by the soil." Again, "This experiment much better accords with the theory of surface manuring, which seems rapidly to be gaining ground every where." Now, sir, I would not take the price of the Register for one year, for this single article. As I heard a political friend once say, after going from one district, in which he expected but a very few votes, into another where he was well received and counted on all: "It made me feel like going out of a snow storm into a warm bath."

Gen. Emory has even gone farther than I have; for I did suppose that the turning in of green crops was the *ne plus ultra* of improving our land with putrescent manure; and in my report recommended it, in preference to the tardy and laborious practice of making and hauling out such as is usually applied.

Is it best to "follow nature," and allow our green crops to rot on the surface? Do, sir, give

us that are in the dark "more light" on this subject. Invite such as have had any experience in the matter to come out and "show their hands." Let us not be content to carry our pumpkins in one end of the sack, with a rock in the other end to balance them, because our fathers did so before us.

There was a resolution passed at our meeting, to forward the reports that were read on various subjects, (amounting to four in all,) to the editors of the Farmers' Register and Temperance Advocate for publication, but as some of us have come to the conclusion since, that, as the reports were elicited by a call from the State Agricultural Society, through the district society, they are their legitimate property, to do what they may think proper with, and, consequently, it would not at present be proper to publish them, the resolution will not in all probability be complied with. These are the principal reasons why this communication is made. For if my report had been published, it most probably would have drawn out all the information now sought for.

In conclusion, sir, permit me to congratulate you, and all those for whose interest you have so ably contended, on the result of your bold and daring adventure of "bearding the lion," the "great monster bank," in his den. S.

#### SWEET POTATOES.

From the South Carolina Temperance Advocate.

The best plan of raising sweet potatoes, agreeably to my experience, is as follows:

Some warm spell in March, I would say, about the middle, take your seed potatoes from the stack, cellar, or where they have been preserved during the winter. Sort out such seed as you would like to plant, and bed them in fresh earth, some potatoes and some earth, until you have as many as you need. Then leave the bed exposed to the weather until planting time. In so doing, the potatoes will sprout. Prepare your ground, which should be sandy soil if you have it. Old land is best if manured. Cowpen land is preferable. Any other manured land will do, except hog-pen. I have tried hog-pen and hog manure three times, and it has failed every time. The potatoes will come up very bad, and directly begin to fire, and finally die. You should plough your ground by the middle of March, and continue to plough it about every ten days until the 15th or 20th of April; then check your land three and a half feet, and make your hills small; then raise your seed carefully, about three in a hill. I believe cutting the potatoes in small pieces to be injurious. Plant them whole. If you should wish to plant in ridges, cut a channel on the top of the ridge and lay in it a potato every 10 or 12 inches. Planting at this season, the potatoes will come up in a few days, and grow finely; whereas, if planted early they will not.

When they want work, plough and draw up dirt with a hoe. Which of those two plans is best, I can hardly say, although I believe the ridge will make the most, but the hill the largest.

I have planted yam potatoes for several years, and generally bed my seed in March. In doing this, I scrape a little of the surface off about 2

inches, and lay the potatoes thick on the ground, and cover with the soil very light; plough your patch as before directed, until the plants come up from 4 to 6 inches high. When there is appearance of rain, make as many ridges as you have plants for. When you get a season, set your plants in as you would cabbage or any other plants, 10 inches apart, and as the plants become large enough, set out as before directed. I believe they will bring a tolerable good crop, when planted as late as the 4th of July. But the sooner, the better. Sometimes, however, we get no seasons, and can hardly raise them in this way. Therefore, I have tried planting them in the bill and ridge as other potatoes, and have been successful in raising them in this way. I raised the largest ones last year I ever saw; they weighed as high as seven and a half pounds. I have the red, Spanish and the yam; the red grows large, but of them all, I think most of yam.

The next is how to preserve them during the winter. I have tried several plans, and the plan most successful is in hill or stack. Scrape out a hole about 4 inches deep, and as round as you well can, large enough to hold 25 or 30 bushels; then place heart pine boards in the bottom; then pine straw, a good layer under and over the potatoes. Then stand corn stalks very closely all around the straw. Then cover with dirt. The stacks should be covered so as to keep the rain and cold from them. Perhaps I should say something about the time and manner of digging! The vines should be well frost bitten before digging, and I am of the impression that they ought to be let stand several days after frost. The potato, hull or peeling will harden very much by standing, and the potato is not half so apt to bruise and injure in putting away, and I believe if the potato vines were all cut off as soon as frost bitten, it would be an advantage to the potato; for when the vine is frost bitten, the sap is inclined to run back to the potato, and if the vines were cut off, it would prevent the sap's returning. The potato would be drier, and perhaps not rot so soon.

My common mode of gathering them is with the plough, first dragging the vines away, then plough the hill or ridge followed with hoes.

July 22d, 1841.

GEORGE BOZEY.

#### MELILOT AGAIN.

To the Editor of the Farmers' Register.

Dear sir:—The pressure of cares and business, and a greater portion of ill health than has ever before fallen to my lot, have long prevented me from attempting a contribution to the pages of the Register. To tell the truth, sir, I got such a castigation the last time any of my efforts appeared there, that I have doubted much whether I ought not, in future, to keep my shoulders out of the reach of such a *cat-o'-nine tails*, as your correspondent "Commentator" wields. But, sir, I love the Register, and the objects which it is intended to promote, and while its editor encourages me to write, I shall feel it a privilege, when circumstances allow, to exert my humble efforts in the noble cause.

Some time last fall or winter, I wrote you a private letter, of some length, containing statements, and (as I believe) some inquiries, on the subject of melilot, an extract from which was published in the Register. The number containing this being mislaid, I can recollect nothing of it, but what is alluded to by Commentator. It may appear strange that I *should* "choose to thus pursue a matter which" I "did not designedly commence," or, that I should be so disposed to magnify melilot—a thing of which I have professed to know so little—as to trouble your readers with it again. If so far as I or melilot may be concerned, I believe—in gambler's phrase—that the game is not worth the candle. But, sir, I do think that it is very important, both to agriculture and the Register, that the kindest courtesy should be felt and employed by your contributors. Whenever our agricultural periodicals become arenas for gladiators of the quill to fight upon, he who never reads them will probably be the best and happiest man.

I do not charge upon Commentator the use of any rude expression. But, in his remarks on my statements with regard to melilot's growing only in calcareous soils—to its being easily turned under with ploughs made by Clute and Reagles, and its affording fine grazing for sheep and cows in winter—he insinuates very strongly a charge of incredibility. Now, sir, these "assertions" were made in a hasty letter to a friend; but I find only one word, which needs the slightest qualification, and that is the word "easily." It certainly is not very *easy* work to the team, but in comparison with the beneficial results, almost any one would say it may be easily done. It is true Commentator does qualify his skepticism in this particular, by supposing that I mean that I can plough this plant under before it reaches half its ordinary growth in good land. I neither claim nor need the benefit of any such supposition. I reside in a region where the melilot grows to the height of six feet, and sometimes higher, having an undergrowth of tender, luxuriant, and not very strongly odorous branches, which live through winter here—latitude about  $37\frac{1}{2}$  north, according to our maps—although they may be as "dead as door-nails" with you and with Commentator. As soon after sowing wheat as practicable, I begin to break up my next year's tobacco ground. On a part of one of my lots melilot grows most luxuriantly. With one of the large ploughs made by Clute and Reagles of Schenectady, New York, I turn it under, and it makes bigger and better tobacco, without any other manure, than the remainder of the lot will do, with all the manure I can put upon it. This is more remarkably the case with one of my neighbors, who has much more melilot than I have. I do not feel at liberty to use any man's name, without his consent—he is now far from home—lest I might hold him up, to be pelted by some commentator. But, I will, in a private letter, which I beg you to keep private—reveal to you his name—and no authority can be better—and I trust that you will visit us this fall, and see him, with a plough made by Clute and Reagles, bury his grand crop of melilot.

As to my sheep and cows eating melilot, they may be great fools, for aught I know, or have very bad tastes—they certainly eat it, whether from

love of it, or from sheer mischief, I cannot say, but they most certainly have exterminated a fine patch of it in my standing pasture, in less than two years—leaving not a sprig. Nor is this from starvation, for they are never very poor. I cannot say how they might compare with more dainty competitors, a little farther north, which probably are furnished with more savory food; but I love to see them eat—even melilot, and sometimes brag of them. Indeed, shame on their master to let Commentator know it though, I have lately ascertained that my horses will eat melilot, while in bloom, in *summer*, (when cut and a little wilted,) discovering no preference between it and clover when put together in a manger. It was wondrous kind in Commentator, after ridiculing my poor sheep and cows for eating melilot, to give them leave—and that in Latin too—to continue the practice, as long as their wiseacre of a master may imagine that they enjoy it. It might be entirely out of fashion, in the present day, to defend the odor of melilot; but I can recollect very well when our grandmothers, who—in matters of taste as well as in many other things—knew *what was what*, full as well as some of our *very well-informed* and *accurate* commentators, were pretty sure to perfume their salve with it.

But it seems that I said, that melilot "will not grow in other than calcareous lands." I dare think so still. In this region, if my observation be correct, it only grows about old settlements, which have doubtless been rendered calcareous by ashes. You have stated, that there are also occasional veins of calcareous land in the state, particularly in its tide-water region. Such I should expect to find at Todebury, and elsewhere, occasionally, in the Gloucester flats. I know nothing of the marl indicator of the lower country, but I should look upon melilot as an indicator of lime, wherever I might find it. And in this, I think, you would bear me out. It probably may not grow on calcareous lands when poor; but we have abundant evidence in this neighborhood, that after such lands have become fertile, it will retain them in that condition? We might judge, *a priori*, that it would do this, being of the trifolium family, and affording a prodigious quantity of vegetable matter. Is such a quality of no value? Would not any vegetable which can enable land to retain fertility, also cause it, if we could learn to make such vegetable grow upon poor land? Were gypsum properly applied to melilot, might it not secure its life, on poor land? I am ignorant, and hope there is no harm in asking a few questions. It cannot hurt even a young farmer, to try a few small experiments. I have entirely failed in mine, upon what I consider poor calcareous land, as it effervesces with acids and has a great many calcareous concretions in it. However it might be with wheat farmers, it certainly would be an acquisition to us tobacco planters, to be able to grow melilot, at pleasure. Our soils do not generally produce clover kindly. We need some hardy grass, and if a trefoil, so much the better, to aid in furnishing vegetable matter to the land. I have tried a variety, such as English rye-grass, tall oat-grass and orchard-grass, as yet without much success. The wild rye, which grows voluntarily, in rank patches, all over my farm, and which I thought promising, has, like the melilot

so far, refused to come under artificial management. It has not come up, when sown. The Guinea and the Gama grasses are too expensive for extensive operations. I have concluded, unless you can teach me to raise melilot, to rely mainly upon clover, herda-grass and timothy. Should I happen to consult you, in future, about some *poke-root* project, I pray you to keep it a secret from "Commentator."

What I suppose to be about the true state of the case is, that melilot was not only an old acquaintance of, but was regarded by Commentator with the prejudice which usually falls to the lot of an old enemy. It stunk in his nostrils. He could afford to it neither thought nor feeling, except hatred, and was probably quite ready, as is now the fashion among writers, to brand as an agricultural heretic, or compare with the foolish old dolt of a *poke-root* farmer, any one who might even make it an object of inquiry. Now I, sir, was never an extravagant admirer of melilot, but having acquired the knowledge of some facts which disposed me even to give it its due, I, very harmlessly, as I think, wrote a private letter to my friend and agricultural adviser, in which I made some statements and inquiries, which he thought proper to publish. For this I certainly did not blame him. It was rather an evidence that he considered the matter worth attention. I felt as safe under the cover of the Register, as my person would have been under the sanctuary of his private dwelling. But I was hauled out and drubbed as unmercifully as if I had written a partisan letter to the editor of a political, or any other newspaper. Flogging is by no means a pleasant operation to its subject, at any time. But when a poor wight, who deems himself both innocent and safe, is caught and thrashed at an improper time and place, for the mere sport of the executioner, it comes rather *tighter* than when he is kindly told and feels that it is *all for his own good*. My object in writing this, is, by no means to quarrel with Commentator; but most earnestly to remonstrate against the admission into the Register of attacks upon its contributors, whether voluntarily so or not. Kind and liberal strictures ought to be made upon their erroneous opinions, but personal asperities should, by all means, be avoided. I repeat that I love the Register, and look upon it as almost the last spot of public ground left, in this country, for heavenly peace to rest her foot upon. Now, if Commentator will pardon such presumption, in one who ever gave a favorable thought to melilot, I will venture very humbly to *advise* him most carefully to read "an Address to the Farmers and Planters of Virginia," by James M. Garnett, esq. It is in the very same April number in which I got my *killing*. He will there find what deep indignation has been excited in the bosom of that amiable and venerable patriarch, by the mischief (and I fear ruin) produced by the swarms of demagogues in the land, and "their vile party-newspapers." And, I trust, he will be ready to unite with that benevolent father in agriculture in his endeavors to protect farmers and their beloved Register, from the slightest infusion of such bitterness. The truth is, as I believe, that Commentator, however long he may have known melilot, was not so well acquainted with it as he himself, or you, sir, thought him. He

seems to have been ignorant that the young growth lives through winter, as well as young clover—that stock are fond at that season of grazing it—that although, in summer, it forms almost an impenetrable thicket, yet, as soon as its vegetable life departs, it becomes very brittle, and by the last of November, especially if stock roam through it, many of its branches lie in broken fragments, like half rotten twigs of brushwood, on the ground; and that, in this state, with a good four-horse plough, the *monster* can be easily ploughed in. He moreover appears to consider it only in the light of a crop precedent to small grain. However "indestructible an occupant," it may appear to be in summer, any tobacco planter may find that it can be subdued in the fall, and that it will rot in time to be an excellent manure for the succeeding tobacco crop. I suspect that neither Commentator nor I would sustain injury by reading over the fable of the chameleon and the travellers.

I will not say that Commentator intended to jeer me for mentioning Clute and Reagles' plough; but, in his singularly felicitous style for satire, he has referred to it with a frequency, and in a way, which led me to suspect a *taunt* was designed. In writing to a friend, who (as I believed) knew my high opinion of this kind of plough, I mentioned it, without intending to boast the possession of a rare implement. It is indeed, in this region, too rare an implement. But, I trust it will not long remain so, as our farmers are beginning to inquire after it, eagerly. It has the rare quality of being made for use, as well as for sale, and, I judge, it is made by men of *rare* honesty. I think if you knew it, you would strongly recommend it. Its *ground-work* is made of cast iron, of great strength and durability, and its wood-work is of excellent timber, excellently put together. It turns the sod admirably, and is so constructed that the near-horse is always on the firm ground, while the off-horse walks in the furrow-track. There is consequently no scuffling for firm footing, which often wears the horses more than—without this—their day's labor would do. In our light high lands, two horses can draw a plough intended for four in the stiff grass lands of middle New York, with less fatigue than is produced by the draught of any other two-horse plough I have ever tried, cutting, at the same time, a furrow-slice at least one-third wider.

I have now endeavored to reply to the commentaries of your correspondent, except in so far as relates to my name. In this matter, I think I have very good reasons for keeping profound secrecy. I certainly signed my name to that unfortunate melilot letter, for which I got thrashed while hoisted upon your shoulders. I, of course, am known only to you, I have no idea of imitating a wild young springal, whom I once knew. For the perpetration of a nightly prank, he blacked himself, and being detected by a negro, was so severely flogged by him, as to feel compelled to avow his name. Rumor began very speedily and unpleasantly to spread the report of this feat. Whereupon, by way of counteraction, he resolved to expose his back in public. When behold, the stripes and bruises stood as thick and indisputable witnesses of a *fact*, which before was thought to be a mere *joke*. If Commentator wishes to whip me again, I must beg, that it be

done still in the dark. Besides, sir, as you speak of him in such high and doubtless merited terms of respect, and as I also feel confident of your friendship, I could wish, for all our sakes, that "quoad" melilot, (and certainly no farther,) we may remain perfect strangers. I consider that he has sinned much more against the Register than against me. If he prefers a fictitious name, to no name at all, and thinks he has not whipped me enough, while I would wish him much better employment, he may try me again as

THE OLD POKE ROOT FARMER.

#### PRAIRIES OF ARKANSAS.

From the Agriculturist.

*Messrs. Editors:*—In a former communication I promised some general remarks upon the prairies of Arkansas; at present these remarks will be confined to those near the Red river. It is known that a prairie is a field or tract of land destitute of trees or even shrubs, generally covered with a thick coat of grass or weeds. These fields are not confined to any peculiar kind of soil or degree of depression or elevation—they are met with in the rich alluvion of the large rivers of the west, and again they form an immense plane stretching from the valley to the highest point of the surrounding hills. What cause has produced these immense plains destitute of trees, is the question proposed to be examined into. There are but three prominent preventives to the growth of trees in every region of the earth: *absolute sterility*, such as pure sand, chalk or pure marl; when water occupies permanently a space, trees will not grow; where there is a sufficient quantity of combustible matter for the action of fire, trees are not permitted to grow, and if they have succeeded in any way to gain a footing, this powerful agent is capable of destroying them while young. Sterility cannot be the cause from which the prairies of the west have sprung; they are very often the richest soils known in the United States. To the action of the two opposite elements, water and fire, they must be attributed. This will appear more satisfactory by a minute examination of some of the smaller prairies. At the present I shall confine my remarks to the small prairies on the Red river. These prairies are small, and present a striking contrast, as far as soil and general appearance is concerned. A chain of these fields stretch from the Louisiana line to the great western prairies immediately on the margin of the river. The low grounds of Red river are generally from four to ten miles in width, nearly level, though if a line should be drawn across the valley it would show a gentle declension from the centre to the edges of the valley, the river invariably occupying the apex of a ridge formed by the continual deposit of earthy matter suspended in its waters. This chain of prairies is situated in the valley and commonly in the curves of the river—they present a contrast with the woodland immediately surrounding them. The soil of the prairies is a deep rich mould—the woodland is a stiff aluminous soil, with a portion of impalpable silicious and calcareous matter. The size of these prairies varies from one hundred acres to several thousands, and from one to four feet higher than the woodland, and are for the

most part gently rolling, the highest part being the centre. In shape they are quite irregular, though commonly elongated, in conformity to the course of the river.

Those prairies that are the finest cotton lands in the state and perhaps in the world were once the beds of lakes. What has produced so great a change as to render the basin of a lake fit for a cotton field, is the question before us. When occupied by water, they of course were lower than the surrounding woodland—at the present they are higher. There is undoubted evidence that that portion of the state has once been the seat of extensive eruptions from earthquakes. The pressure caused by such an agent would affect the crust of the earth; that portion of the surface covered with water being more soft than the woodland, would more readily yield to the pressure, which has given them such an elevation above the surrounding woodland that the water no longer finds a basin to rest in. The water being removed, their rich surface would soon become thickly set with what is called prairie grass, that is found on all prairies from Canada to California, and by the immense amount of combustible matter it produces, forms ample means for keeping off intruders—a single spark of fire is sufficient to set the whole in fearful conflagration. It happens that the action of fire is suspended or prevented, affording an opportunity for the growth of timber; in this manner, in the course of a few years, a few hundred or thousands of acres have been wrested from the meadow and appropriated to the production of timber. So soon as settlements are formed near to prairies and the action of fire prevented, trees spring up rapidly and in a few years form a forest. The opinion offered above as to the formation of these prairies, is sustained by a fact known to some of the present generation. The earthquake of 1811, which had its seat near New Madrid in the state of Missouri, produced similar effects, elevating the basins of lakes and emptying their contents upon the surrounding country—in one case there was a mill upon the drain of a lake that was elevated several feet.

There is a second class of prairies near the Red river, occupying high land—these differ in many respects from the former, though only a few miles distant from them. The soil of the latter is highly calcareous, resting in every instance on a deep deposit of carbonate of lime of different degrees of purity. This deposit has been penetrated to the depth of from 60 to 80 feet without any apparent change, being filled with fossil shells from the surface to the greatest depth. The surface of these prairies is uneven and generally much higher than the adjoining woodland. These prairies are situated on a ridge considerably elevated. There can be no doubt entertained but that the whole space they occupy has, at some anterior period, been the bed of some vast body of water, doubtless the Gulf of Mexico. The shells that are found on the surface are marine shells, in a high state of *petrification*. To account for their formation it is only necessary to admit that which is *self-evident*, that the lime formation which constitutes the foundation was once in a soft state readily yielding to verticle pressure, but as some parts would be more dense than others, these sections would of course be less affected by such pressure; this has caused the inequality of the surface. The

detritus and decomposition of the mass of lime and decay of vegetable matter, has spread a rich covering of soil highly calcareous, rich and well adapted to the cultivation of cotton, corn, wheat, and many other articles of consumption and commerce.

What has been attempted to be proved respecting these small tracts of prairie land, may be safely asserted with regard to all similar phenomena; where absolute sterility prevails, as in the deserts of Asia and Africa, the question is at once settled; but this is not the case in regard to our prairies; they are often more fertile than the land upon which timber is growing, so that we must seek for an adequate cause in some other agent or agents. Water and fire are by far the most powerful agents that act on the earth. They are fully competent to produce the effect now under consideration. The former of the agents has at one time asserted almost universal dominion over the American continent, leaving only a few peaks of the higher mountains; these waters have been removed by some powerful cause to other and distant locations, leaving their bed to become the nurturing spot for vegetation. By the action of fire, no plants but annuals have been permitted to assert their dominion over these immense plains. There can be no doubt that the same cause that has produced the American prairies, has caused these extended plains in the south of Europe and the north of Asia.

I have not seen any theory respecting the formation of prairies; there may be those far more plausible than the one so briefly sketched above; if so, the writer is ignorant respecting them and their authors. In conclusion, it is but just to our new state to add, the prairies, mountains, rivers, springs, minerals and plants of Arkansas, present a wide field for investigation. The geologist would find an ample field for observation. There has yet been no survey made, except a running trip by Featherstonhaugh, in which he could see but little, and of that little he said almost nothing, except that he met with the old red sand stone.

W. W. STEVENSON.

#### MALARIA.

From the Edinburgh Philosophical Journal.

*On the spontaneous evolution of sulphuretted hydrogen in the waters of the western coast of Africa and elsewhere.*

In the course of a lecture on this subject, delivered at the Royal Institution, by Professor Daniell, he observed, that it was curious that the impregnation of the waters of Western Africa with this deleterious gas had so long escaped attention. In water seaward forty miles its presence can be detected; and it exists in considerable quantity in the Volta, in Lopez Bay, in the Grand Bonny, &c.; it spreads over an area of 40,000 square miles, from about 8° north to 8° south latitude. The origin of this vast accumulation of sulphuretted hydrogen, Mr. Daniell attributes, not to volcanic action, not to the decomposition of pyrites, nor to the process of the decay of animal matter, but to the action and reaction of the vegetable matter carried down by the tropical rivers, and the sulphates always

more or less present in sea-water. This, moreover, he has proved by experiment. Last winter he placed some fallen leaves in a jar of new river-water; also a similar proportion in a second jar, with three ounces of salt, and in a third, with a like quantity of the sulphate of soda—all closely stopped, and a card-board, with acetate of lead, over each. After having been kept three months in a warm closet he examined them. The first emitted the common smell of decayed leaves; the second that of a pleasant conserve; but the third, no words could convey the stinking odor, nauseous beyond all description. This of itself was sufficient to establish the generation of sulphuretted hydrogen; but further, the usual blackening of the lead of the card-board in this jar only left no doubt on the matter. Wherever, then, sea-water holding sulphates in solution mixes with fresh water and vegetable matter, this gas must be produced, and its effects on animal life are well known. It is a record in Italy, as well as in Essex, that where the sea has been prevented flooding the marshes, that locality, previously very sickly, had become perfectly salubrious. To sulphuretted hydrogen, therefore, Mr. Daniell ascribes the dreaded malaria, as also the deadly stinking miasma of Africa, producing languor, nausea, disgust, and death. The jungle-fever of India, also, he thinks attributable to its presence. The soil abounds with sulphates of magnesia and soda; must not, therefore, quantities of sulphuretted hydrogen be generated in the jungle-swamps? Besides the direful consequences to the health of man visiting the deadly shores of Africa, this sulphuretted hydrogen does him great injury in a commercial point of view. The copper-sheathing of vessels is rapidly destroyed. Mr. Daniell exhibited a sheet taken from the Bonetta in August 1840, on her return from the African station. Although new not many months before, it was eaten into holes, with a deposit on the one side of the protochloride of copper, and of the black sulphuret of copper on the other. A plate exhibited, taken from the Royal George, was in a good state in comparison with it. The latter had been acted on for sixty years by sea-water, but, be it remembered, by sea-water alone, not impregnated with sulphuretted hydrogen. On it there was no trace of a sulphuret. These, then, were the two principal and important points illustrated by Mr. Daniell; and the question put by him, and answered in the affirmative, was, Can science indicate a remedy for these evils? For the former, fumigation with chlorine. Chlorine and sulphuretted hydrogen cannot co-exist. Chemical action instantly takes place; sulphur is thrown down, hydrochloric acid formed, and malaria and miasma nowhere; the destroyer destroyed. For the latter, the destructive agent is not decomposed, but its action is directed to a less costly material. Copper is to be protected by zinc, for which sulphuretted hydrogen has the stronger affinity; and so long as the latter metal is present, the former is free from the attack of the gas in solution. This, it will be readily seen, is Sir H. Davy's principle, which involved the use of zinc or iron; but in the case of sulphuretted hydrogen, zinc and not iron must be employed. Mr. Daniell regretted that Davy's zinc-protectors had been so soon abandoned, and only because the copper, not acted upon by the muriatic acid, became a nucleus for earthy,

vegetable, and animal matter, and the ship's bottom was in consequence fouled, as it is termed. The remedy for this, he said, was most simple. Let the protectors be so arranged that contact may be broken and renewed at will. The zincs and copper separated for a short time, the earthy deposits would soon be removed. In consequence of Mr. Daniell's report to the Admiralty, chlorine has been furnished the Niger Expedition, and no ship hereafter will proceed to the African station without that purifier in store, nor without zinc-protectors for her copper. It is to be hoped that all ship-owners will follow the example of the Admiralty Board in this respect.—*Literary Gazette*, No. 1272.

EXTRACTS FROM GEN. EMORY'S ADDRESS  
BEFORE THE MARYLAND STATE AGRICULTURAL SOCIETY.

You will see to-day, gentlemen, a great display of fine stock; perhaps many if not all the favourite varieties now so highly esteemed in Europe and this country. Of the horse, which justly stands at its head, as the noblest and most generous of the quadruped creation, you will see several varieties from the high bred racer, which imparts in all his crosses spirit, activity, power and endurance, down to the nimble and sure-footed Canadian—crosses between the two varieties will give you (always excepting the thorough-bred) perhaps the quickest, the hardiest, the most tractable and best horses for light draft, or for the saddle, to be obtained from any other source.

You will see the noble and beautifully formed Durham short horned cattle, bred in England by judicious and scientific farmers from the Teeswater and the Holderness varieties, through so long a period that they have acquired much of the fixed characteristics of a native or original breed. For great size, and beauty in the eye of the butcher, so keen to detect the value of neat beef, with little offal, and for the quantity of milk they give, they stand unrivalled. There is a prejudice against these cattle among some who do not consider the necessary relation which exists between the size of an animal and the quantity of food which is required for his subsistence—between the waste from a very great secretion of milk and the necessity which exists of regularly and abundantly repairing this waste by nutritious food. These cattle require generous treatment in the pasture and in the stable, and with this, they shine pre-eminent above all others. In my opinion it is a great mistake to suppose them more tender than other breeds of cattle; with plenty of rough provender regularly supplied, they are able to rough it in inclement weather, with any other race with which I am acquainted.

The Ayrshire cattle are regarded by some as an original race, but the best information leads us to believe they derive their lineage from much the same source as the Durhams—these they resemble much in color, form and qualities, and their diminutive size may very probably be the result of a more rigorous climate and a more scanty supply of food.

Of the *Herefords*, very few have been introduced into this country, and I shall therefore pass

them by and proceed to the consideration of the *North Devonshire* cattle, as the race which in many parts of England and this country are regarded as the rivals in excellence of the short horns. The *Devons*, as they are called, are neat, well formed animals of a beautiful mahogany red colour, without any white; they are muscular and strong and of about two thirds the size of the short horns. Like the latter they are proverbial both for their early maturity and aptitude to take on fat, and these high qualities alone are sufficient to induce any respectable breeder of cattle to incur the expense of acquiring the one or the other race. The gain from these advantages in a series of years is very great indeed, and the society will be surprised to know that at least three-fourths of the improved cattle of England go into the hands of the butcher before they are three years old. The *Devons* are not as deep milkers as the short horns, but their milk is considered to be of richer quality than what is taken from any other cattle except the *Alderneys*, a race, inferior for all other purposes except as milch cows. When the union of the three qualities for milk, beef and work, are desired in the same breed of animals, none is superior to the *Devons*, and none other will bear even a comparison with them, except the *Herefords*. Between the short horns and the *Devons* I am at this time making a course of experiments and observation on my own lands, with the view of ascertaining which of the two, under all circumstances, are the most suitable for the section of the country where I reside, which I hope may not only be useful to myself but to others.

Fine woolled sheep are unfortunately not now in request in the country, although few things, at a fair price for wool, will afford a more profitable return for the capital employed and the current necessary expenses, than fine woolled sheep. We all recollect how profitable *Merino* sheep were for a short time for their wool, and how suddenly they fell to be worth scarcely any thing. If there is a great fault in the management of our people, it is, that as soon as it is ascertained that any thing is profitable, every one is disposed to go into it, and it is soon run to death. If there is a grievous fault in our political system, it is the uncertainty and the unsteadiness of our laws. The law to-day may justify a man in embarking his whole means in a particular pursuit, and a change of the law to-morrow, may leave him ruined and a beggar. These instances are unfortunate exceptions in our system to the general rule of wisdom and prosperity.

Fine woolled sheep being now out of the question, I will confine my remarks to the *South Down*, and *New Leicester* sheep, now the favorites of the day. Having myself the three races, including *Saxonies*, in great purity and carefully kept separate and bred in distinct flocks, what I shall say of them is the result of my own observations corroboratory of those of others.

The *South Down* sheep are beautifully formed, hardy, strong and active; the wethers when well raised averaging, at three years old on grass, over a hundred pounds in the carcass—having flesh of great juiciness and delicacy, and the fat well marbled through. No mutton is superior to it—none other perhaps is its equal when quantity as well as quality is taken into the account. The wool is short and fine, too fine and light to be as valuable



as that from some other breeds, particularly the Leicesters, which have in quantity about one-third more. The South Downs are early at maturity, apt to fat, and feed alike well on hilly as on flat lands. They are considered in England as a native or original breed, only improved by breeding in, and I am persuaded the root from which they have sprung is the breed of speckled legged sheep imported into this country some fifty years ago—some of which I have now on my lands unmixed and pure, and not much inferior to the present South Downs, having much the same qualities.

The New Leicestershire sheep were first called the Bakewell's, from the name of the breeder, then the Dishleys, from the name of Bakewell's residence, and lastly, the Leicestershires, from the county which has now almost universally adopted them. They are also beautifully formed sheep, having very large carcasses, well covered with wool. They arrive early at maturity, and are wonderfully prone to fat—but they do not afford mutton fit for the table of the epicure—The quantity of lean or muscle of these sheep is disproportionately small, and is so covered with fat that it cannot be roasted. Like the Chinese hog and Mr. Bakewell's cattle, the fat is chiefly laid on the outside of the frame, and hence the meat is not marbled. Like Mr. Bakewell's cattle they are also an artificial race, and are not hardy. His cattle have gone out and are extinct, but his sheep, standing the test of time and trial better, remain, and they have been so long bred in, that according to my experience they are not now so inclined to breed back, as it is technically termed, as they were twenty years ago, and have assumed from long breeding in, like the short-horns, much of the fixedness of an original race. They are particularly suitable to flat rich lands, like the county of Leicestershire, and are wholly unsuited to hilly lands where they have to climb and work for their sustenance.

There is unfortunately a sort of mania which pervades our country once in a while in favor of a particular thing or a particular kind of stock, which is scarcely limited within the bounds of reason. The Merino sheep have had their day—the blood horse his day—improved cattle have had their day—the mulberry fever has raged and it has left the patient in a complete state of collapse. These over-zealous efforts might even produce benefits by disseminating a good thing through the country; but sometimes they are so overdone, as to produce destructive and revolting reaction. The pig, the hog, is now lord of the ascendant, and more particularly attracts the attention of the whole country than anything else in the farming way. Mr. Loring, Mr. Bement, Mr. Martin and Mr. Hurlbut, not forgetting our worthy friend in Hollins street, are the great men of the day, and if they do not quarrel too much among themselves, we may yet chance to elect one of them to the presidency. You will see here all the favorite varieties of that useful animal the hog, now become so universally popular. The amateur in good hams, and the speculator in pork and lard, may least their eyes here to-day, to their hearts' content. The truth is, it would seem, we have been so long required by rescript "to go the whole hog," that we now go him voluntarily and from pure choice.

It is very strange, but it is nevertheless a fact,

that there are some practical farmers who, (losing sight of earlier maturity, greater aptitude to fat, and superiority in the quality of the meat) deny that the improved breeds of stock of England are any better for our purposes, than the old stock found upon our estates some thirty or forty years ago. I feel able to speak from some experience on this subject, and to say that the ox or the wether averages now, upon my farm, at least twice the weight they did forty years ago, and the meat being of much better quality, they will sell for nearly three times the prices they sold for at that time. But in proof of the gross error of such opinion, I will offer you far better testimony than that of my own experience.

By the estimate of "Dr. Davenant, made in the year 1710, the average dead weight of black cattle, (so called because most of them were then black,) was only 370 lbs., that of the calf 50 lbs., and those of sheep and lambs, taken promiscuously, 28 lbs."

Mr. McCulloch, in his Dictionary of Commerce, a book having the accuracy of a law book, makes an estimate 120 years afterwards in the same (Smithfield) market, and puts the weight of cattle "at 550 lbs., sheep at 60 lbs., and calves at 105 lbs."

Mr. Youatt, who has recently prepared a most valuable book on cattle, published by the Society for the Diffusion of Useful Knowledge, estimates the present average to be 656 lbs. for cattle, 90 lbs. for sheep and lambs, and 144 lbs. for calves: being about double the weight of those animals as estimated by Davenant, one hundred and thirty years before.

More conclusive proof could not be adduced, and it should be borne in mind that all this wonderful improvement commenced with the celebrated Mr. Bakewell about 60 years ago.

Mr. Youatt very properly remarks, "that it was a disgrace to the agriculture of the times, that Bakewell should have been suffered to pass away without some authentic record of what he effected, and the principles that guided him, and the means by which his objects were accomplished." It is greatly to be regretted that he who had thus worked out such wonderful results as almost to be able to breed his cattle and his sheep to any pattern which his imagination might suggest as desirable, should have passed away without leaving behind him the disclosure of the secrets of his great art. That he was governed himself, however, by an extraordinary judgment in the application of the soundest philosophical principles has never been denied. After his death, this omission excited the scientific men of the time to an inquiry into the principles which had governed him—the subject of procreation became for the first time an object of analytic inquiry and investigation, and among many other speculations, the valuable and scientific essays of Mr. Surgeon Cline and Sir John Sebright were elicited and given to the world. These essays are to be found republished in the 3d and 7th vols. of the old American Farmer, and are worthy of perusal, because they are fraught with a large store of practical knowledge, as well as sound philosophical speculation. Since then and very recently, a new theory upon the subject of breeding has been started by Dr. Walker, who, availing himself of the light already shed upon the subject, makes new suggestions well

worthy of the consideration of all investigating minds. This bold, but scientific innovator, expounds the old aristocratic notion of the *qualities of blood*, and lays down some principles in breeding as novel as they are instructive.

Does it then admit of a question, I would ask, whether the American farmer shall avail himself of the improvements made in England during the last fifty years in live stock of almost every description, and of the lights which have governed her people in reaching their present point of improvement? I should think not. Proud as we may be of our own country, and of our own prowess, it cannot discredit us to avail ourselves, whenever in our power, of the labor, the improvements, and the skill, if you please, of others—even if they had originated with a people, having less claims upon our respect than our ancestors have.

The course a young farmer desiring to get a good stock should pursue is to inquire first at home into the character of his climate, the quality of his soil, and the extent and quality of the sustenance which he will be able to supply—Then the next inquiry should be into the properties and qualities of the different varieties of improved stock, and select such as are likely to suit him best, all circumstances considered. After selecting he should confine himself strictly to the object of his choice. It is no way desirable that a beginner shall import stock, or purchase here the highest priced of pure blood—unless it be the blood horse, then he cannot *begin* too high.

It is a great mistake to suppose that animals of the same breed and reared in the same manner are better in England than they are in this country: the reverse, I verily believe, to be the case, having all the choice varieties of England now in the country. A man may buy in this country the best of pure bloods, selected by his own eyes, for less money than he will be required to pay for inferior animals of the same race if he import them from Europe. No man can therefore import stock advantageously or profitably from abroad, unless he has been breeding the same race of animals at home for many years, and requires a new cross from a distant family; and then his selection should be well made from the flocks of the best breeders, regardless of cost—such men only ought to import, and such only can do it advantageously and profitably to themselves.

Our state I have before said is happily circumstanced and located as a breeding state for every variety of stock, not only for our own, but for the purposes also of other states, and not doubting that the efforts so successfully already begun will be continued, I must beg to be permitted to warn the members of our society against mixing together in breeding the different varieties of the same species of animals.

Keep them entirely distinct, and bring in your crosses from distant families of the same race, and do not give them even one cross of another breed unless you have a definite object; some specific point of form or quality which you wish to correct or improve, and then you must be sure that you do not introduce at the same time another defective point, and pursue the object with undeviating steadiness. If you do not upon trial like the race you have adopted, change it and get another, but do not jumble them up together, for it is wholly inconsistent with, and contrary to the true principles

of breeding; and will not fail to land you in the cheerless position of disappointment and disgust. The first cross between different races will sometimes give you fine animals for the butcher, and may prove some deficient point, but the next admixture if you do not take care will leave you with nothing which you can call by any other name than mere sheep or cattle. Like poor land made rich without changing its constituent parts, ever struggling to get back to poverty; so live stock bred from a jumble of different breeds are perpetually inclined to breed back to their original races, under deteriorating circumstances. Occasionally you may get what naturalists term an *accidental variety*, but when you do get an animal of this description which you may desire to perpetuate, the experiment is a dangerous one, and to transmit its *good* qualities requires no ordinary degree of judgment and intelligence, and also indomitable perseverance.

#### AN ESSAY ON THE IMPORTANCE OF LIME IN SOILS.—NO. I.

*By Darius Lapham, Civil Engineer.*

*From the Western Farmer and Gardener.*

The farm on which my father resides, in Champaign county, in this state, lies in one of those beautiful glades branching off northwardly from the main valley of King's creek, a large tributary of Mad river. We came into possession of a part of the present farm in 1830. Previous to that time, this part had been "cropped" for many years with corn, wheat, &c., without any regard to a rotation of crops, or the addition of manure, until the soil had become almost exhausted, or worn out, by this constant drain upon its resources. Since it has been in our possession it has been divided into rectangular fields, of nearly equal area, and the "four crop" system of rotation has been pursued in the cultivation throughout, until each field has had at least one crop of clover ploughed into the soil, and several of them have received two crops of clover. Very little stable manure has been used; but whatever else the farm afforded, such as refuse straw, cornstalks, weeds, &c., have been added to the soil as manure. Some few experiments have been made with gypsum, and also with leached ashes, but to no great extent—sufficient, however, to show the benefit which clover derives from the application of these substances. The experiment was likewise made of the application of gypsum to Indian corn, by putting a small quantity in each hill at the time of planting, without producing any sensible effect on the corn;—but two years afterwards, when the same field had been laid down in clover, the places where the gypsum had been applied to the corn, became very conspicuous by the greater luxuriance and increased height of the clover at those places.

Although by this system of management there has been an evident improvement in the fertility of the soil, on this part of the farm, since we have occupied it, still it cannot be called fertile, as it will not raise good wheat, and corn crops are below an average both in quantity and quality. Oats and barley seem to do better than corn or wheat; but it is necessary that the soil should

be rendered still more productive, before we can expect to realize much profit from it. Despairing therefore of restoring fertility by the means heretofore pursued, it has been an object of constant inquiry and research with me to ascertain the best mode of increasing the productiveness and fertility of this part of the farm. The first step in the improvement of any soil, is to obtain an accurate analysis of its component ingredients. Accordingly I sent a specimen of the soil, taken from the middle of a cultivated field, to my friend, Dr. J. L. Riddell, whilst he was employed in making a geological survey of the north-western part of the state; and by a careful analysis he found that one hundred grains contained the following substances:

Water,	- - - -	6 grains.
Organic matter,	- - - -	3 "
Silicious "	- - - -	80 "
Aluminous "	- - - -	8 "
Per-oxide of iron,	- - - -	3 "

Total, 100 "

He likewise observes, that *lime* could not be detected in this soil; and the amount of saline matters was inappreciably small. He further states that the soil seems to be a sediment from turbid water. It has usually a dark brown, or reddish brown color, consists of rather fine particles, and exhibits to the naked eye numberless glimmering grains of sand.\*

Having procured the foregoing analysis, the next step in this inquiry was to ascertain which of the component parts of the soil required to be increased or diminished, or whether any other substances were required to be added in order to increase the fertility of the soil. The prosecution of this inquiry led me into the extensive and almost inexhaustible subject of agricultural chemistry; and the pages of Davy, Chaptal, Ruffin, and Professors Hitchcock, Dana, Jackson, Liebig, and several others, have been consulted during my investigations.

All fertile soils throughout the known world, are composed essentially of the following ingredients:—

Water, by absorption.

Humus, decomposed animal and vegetable matter.

Silicious matter, or sand.

Aluminous matter, or clay.

Calcareous matter, or lime.

Magnesia, manganese, and oxide of iron, are likewise frequently found in soils; but they are not deemed essential to fertility; and in certain states of combination with other substances may be either injurious or beneficial to the growth of plants.

The greatest degree of fertility which it is possible for any soil to attain, may be produced by a proper admixture in certain proportions, of the five substances above named; but the proportions of the various ingredients may be infinitely varied, (avoiding extremes in any one substance,) and still the soil may be deemed fertile; but, nevertheless, there is a limit beyond which the fertility of a soil cannot be carried. What the exact proportions are, and what degree of ad-

mixture and combination of the particles are requisite, to obtain the greatest productiveness, has never yet been precisely ascertained; and in order to form some idea of this point, it is useful to have recourse to the analysis of soils of acknowledged fertility and productiveness.

Professor Charles T. Jackson, in his Report on the geological survey of Rhode Island, has given the analysis of ninety-four different cultivated soils, taken from various localities in nearly all parts of the state, and in eighty-nine of them, *lime* was present as one of the ingredients. Selecting, promiscuously, the results of ten different cultivated soils, from the tables in the geological report, and making an average, we find that the proportions of the five essential ingredients composing the soils, are in one hundred grains, as follows:

Water,	- - - -	2.0 grains.
Humus,	- - - -	5.0 "
Silicious matter, (soluble,)	- - - -	3.5 "
Silicious " (insoluble,)	- - - -	85.0 "
Aluminous " and iron,	- - - -	3.5 "
Calcareous " (salts of lime,)	- - - -	1.0 "

Total, 100.0 "

A cultivated alluvial soil, taken from the banks of the Mississippi, 100 miles above New Orleans, gave the following results by analysis of 100 grains:

Water,	- - - -	3.9 grains.
Humus,	- - - -	3.6 "
Silicious matter,	- - - -	81.4 "
Aluminous matter and iron,	- - - -	7.0 "
Calcareous " (salts of lime,)	- - - -	2.8 "

Total, 98.7 "

The analysis of one hundred grains of dried soil from the banks of the Nile in Egypt, a soil celebrated from the remotest antiquity for its luxuriant vegetation, afforded the following results:

Water,	- - - -	0.00
Humus,	- - - -	6.90
Silicious matter,	- - - -	47.39
Aluminous "	- - - -	32.10
Calcareous "	- - - -	2.02
Iron	- - - -	11.20

Total, 99.61.

The following is an analysis of a very rich soil from Batavia. The analysis was made by Mr. Henry Sumner, of Boston, under the direction of Prof. Jackson. 100 grains of this soil yielded,

Water of absorption,	- - - -	7.8 grains.
Humus,	- - - -	24.9 "
Silicious matter,	- - - -	43.0 "
Aluminous "	- - - -	14.8 "
Calcareous " (phos. and crenate of lime,)	- - - -	2.0 "
Per-oxide of iron,	- - - -	7.9 "
Magnesia,	- - - -	0.3 "

Total, 100.7 "

The foregoing analysis of some of the most fertile soils of the world, will serve to instruct us as to the nature and amount of different matters that ought to be introduced into a given soil, in order to render it more fertile. It is not expected that this will be done at a single operation; but it is important that we should know the proper

\* See Riddell's Geological Rep. to the Gen. Assembly of Ohio.

course of improvements, and then we can gradually effect them, according to our means.\*

By making a comparison between the results of the foregoing analyses of cultivated soils remarkable for their great fertility, and the constituent parts of our soil in Champaign county, we at once discover a striking difference in the *total absence of lime* in our soil, as well as a deficiency in the proportion of humus, or organic matter. The sum of the silicious and aluminous matters in each being very nearly the same. It is, therefore, highly probable that an artificial addition of the requisite proportion of lime and organic matter to our soil will restore its fertility, and render it equal to the general average of the soils above noted. But there are other considerations which render it still more probable that the deficiency of lime and organic matter is the principal, if not the sole cause of the unproductiveness of our soil. These considerations I shall proceed to notice.

If there is any one principle settled in agriculture, it is that some *convertible salt of lime* is essential to the fertility of soils, and that certain crops cannot be raised upon a soil destitute of lime. When we consider the most favored grain regions of the earth, it cannot fail to be remarked, that the soils are invariably charged with a notable proportion of lime. On the other hand, we note that where the soil is deficient in this respect, such crops are invariably meager, blighted and unprofitable. A soil destitute of lime may produce straw, but it never can yield grain!

It is an important question, at present much discussed, whether salts of lime are essential to the nourishment of certain cereal grains, and whether the amount of calcareous matter is diminished in a soil by raising upon it successive crops. It is evident, *since all vegetables contain lime* in their constitution, that if they are raised on and removed from the soil after their growth, a certain proportion of the *salts of lime* must be abstracted. No one, I presume, will in modern times, contend that plants create any elementary substance. If they contain lime they must have drawn it from the soil, or from the manures that have been spread upon it.

One hundred grains of the ashes of the grain of wheat were analyzed by Sir H. Davy, and he obtained 44.5 per cent. of the *earthy phosphates*, chiefly *phosphate of lime*. The ashes of the straw of wheat contain six per cent. of the *phosphate*, and one per cent. of the *carbonate of lime*; Indian corn contains the *phosphate of lime*, its ashes yielding no less than thirty-six per cent. Clover contains the *sulphate of lime*; and nearly all the plants known yield a small proportion of *calcareous matter*.†

It is therefore proven beyond all doubt, that *lime in some of its various forms is an essential ingredient in all fertile soils*; first, from the fact that it is almost universally present in the most productive soils throughout the world;—second, from the fact that all known plants contain more or less calcareous matter in some form as an essential constituent.

It is likewise proven that lime, in some of its forms, must be continually abstracted from the

soil, by the constant growth and removal of those plants which contain in their constitution any notable proportion of the salts of lime; and hence it may be inferred, that by constant cropping, the lime contained in the soil will in time become exhausted; and unless it be again added artificially to the soil, it will become incapable of producing those plants which contain any considerable proportion of lime. This fact is likewise proven by universal experience, in the cultivation of wheat, Indian corn, clover, and other plants containing in their constitution lime in large proportions.

Until very recently, it had not been suspected that any soil was wholly destitute of calcareous matter; and more especially soils resting immediately upon limestone formations. Indeed, most of the writers on agricultural chemistry, by the manner in which they have treated of soils, and their constituent parts, would induce their readers to infer the general presence, in very large proportions, of this ingredient, in *all soils*. Mr. Edmund Ruffin, of Virginia, was perhaps the first to discover the general absence of this substance in all soils which are naturally unproductive. He states that in 1817, when first attempting to analyze soils, it was with surprise and some degree of distrust, that he found *most specimens destitute of calcareous earth*. And after repeated trials, made with great care and accuracy, he concludes that no naturally poor soil (below the falls of the rivers in Lower Virginia,) contains the *smallest proportion of carbonate of lime*. After having made extensive experiments on both rich and poor soils, from various parts of the country, Mr. Ruffin arrives at the following conclusions:

"That all calcareous soils are naturally fertile and durable in a very high degree."—And,

"That all soils, naturally poor, are entirely destitute of calcareous earth."

It, then, can scarcely be denied (continues Mr. Ruffin,) that calcareous earth must be the cause of fertility of the one class of soils, and the want of it produces the poverty of the other. Qualities that always thus accompany each other cannot be otherwise than *cause and effect*.\*

But however deficient the soils in some parts of Virginia may be in calcareous matter, many persons will be surprised to learn, that a *large proportion of the soils of Ohio are likewise destitute of this essential ingredient*.

In the second Geological Report of Ohio, Dr. Locke states that the soil formed by the disintegration of the under-lying limestone formations, in the south-western parts of the state, *does not contain at the surface so much lime as we should anticipate*; and rarely if ever, where undisturbed, does it *effervesce or foam with acids*. On the tops of the hills around Cincinnati, the *loam* lies seven to nine feet deep, before any stone are mingled with it, and *this loam is not effervescent with acids*.

The vegetable acids, (observes Dr. Locke,) which exist in the natural juices of plants, become saturated with lime as they pass through it, and form soluble salts, which are washed away by the rains. These causes, operating for ages, have evidently leached the surface, especially on the table lands, till, in my opinion, *there is an ab-*

\* Jackson's Report.

† Jackson's Report on Rhode Island.

\* Ruffin's Essay.

*absolute want of calcareous matter.* If this is the fact, the clay-marl, found every where between the layers of rocks, would be a beneficial manure; and burnt slaked lime would be still more useful, and would undoubtedly renovate the wheat and grass lands, *which, on the table lands, are to some extent worn out.*

In a previous Geological Report of Ohio, Dr. Riddell says, the bottom lands near the mouth of the Big Miami, are in some places *destitute of carbonate of lime.* The diluvial soils of the extensive plains of Champaign and Logan counties, as I learned from frequently repeated experiments, *are usually destitute of carbonate of lime.* I have often noticed, by repeated observation, while travelling north in Ohio, that the inner tracts of all large plains, whether the margins are bounded by hills of limestone or not, present a soil in which *carbonate of lime cannot be detected.* Between Clarksville and Springfield, the soil does not often contain any *appreciable amount of carbonate of lime.* Near Upper Sandusky I tried with acids, portions of the upland soil from several places, *but no carbonate of lime was indicated.* Neither would the *black mould effervesce*, when submitted to the same experiment. The soil about Monroe, in Huron county, *does not effervesce with acids;* and would probably admit of improvement by the application of calcareous matter.\*

Farmers of the west! We beg of you to reflect upon these facts. Is it *true*, that your soils contain little or no lime or calcareous earth? A sip's worth of nitric acid, poured upon the soil, will inform you. Is it also *true*, that the presence of lime, in some of its forms, is *essential* to the proper growth and perfection of nearly every vegetable known, and more especially of those that are cultivated and used as food for man and animals? If you should not be convinced of this fact, from the brief considerations above given, read the invaluable works of Davy, Chaptal, and many others, on agricultural chemistry. And should you succeed in convincing yourselves of these important truths as I have done, you will naturally inquire, what is to be done to remedy this defect in our soils. In the next number, I propose to aid you in your researches for the proper remedy, as well as to offer some further and more important facts and reasons upon the *necessity* of the application of calcareous earth to poor and exhausted soils.

ADDRESS TO THE AGRICULTURAL SOCIETY  
OF CUMBERLAND, BY THE PRESIDENT, W.  
S. MORTON, DELIVERED 8TH OCTOBER, 1841.

Published by order of the Society.

**Gentlemen:**—In previous addresses I have attempted to give you my views of the improvement of land, and the modes by which it may best be effected, of the importance of raising stock, and especially of attending, most particularly, to their pedigree, to their comfort generally, especially as regards shelter from bad weather, and providing them bountiful supplies of food adapted to their necessities, during the various seasons of the year. I have also made some remarks on the rotation of crops and the culture of

some of their varieties. It has been your pleasure to retain me in the office which now renders it my duty to address you, notwithstanding my urgent solicitations to be excused, and sincere desire to see it filled by some other individual, and my convictions of the propriety of rotation in office. I confess that the choice of a subject, for occasions like this, is becoming with me a matter of some difficulty. I have thought it might not be incompatible with the objects of our institution, or disagreeable to you, were I to withdraw from the mere machinery of our noble science, and make some remarks, at this time, on what I would call *the morals of agriculture.*

It has pleased a beneficent Providence to conduct us through another agricultural year, in the enjoyment of blessings which none other than he can bestow. In casting our views around, we find abundant cause for thankfulness, that "our lot has been cast in pleasant places," and that "truly we have a goodly heritage." Our causes for gratitude are indeed great, and they are numerous. We have civil, religious and physical privileges, which are our boast throughout the world. Our climate is uncommonly salubrious, our soils freely productive, and capable of high improvement. In recounting the blessings poured out on us by a kind Providence, well may we exclaim with the Psalmist, "He hath not so dealt with any nation."

But amidst all our civil and natural advantages, we are obliged to see and to confess much that is wrong. Man is perhaps most restless, and most prone to err, when most blessed. Boasting himself to be the lord of God's heritage, he is answerable for all the error and all the wrong in its management. Doomed by his Maker, soon after his creation, to eat his bread in the sweat of his face, he has ever since been exerting himself in unavailing efforts, to liberate himself from the literal fulfilment of his curse. But in proportion to the breach of this law of his nature, so does he invariably fail of success, in the issue of his labors. We generally are able to trace the cause of our failures to ourselves, and to recollect that the means of success were in our power, but for want of attention or of exertion were not applied. Knowledge unemployed is *not* power—time misspent is *not* money.

It is lamentable to observe the many and diversified subterfuges, to which multitudes in our country resort, in order to escape the endurance of this ancient curse upon our race. Many remove to the fertile wilds of the west, merely to escape from labor. These, like their ancient prototypes among the children of Israel, are prone to regret the flesh-pots left behind, before they pass through the wilderness to the promised land. Many, almost as quick as thought, turn merchants, vainly dreaming that the very name of *merchant* will make them rich. We all know how speedily men who get to be merchants, without the requisite mental and moral training, become *broken ones.* Indeed, these are becoming so numerous, as a class, and public sentiment so charitable towards them, that it is a matter of some doubt, whether such retired gentlemen do not thus fix their *caste*, and establish themselves in a higher order of *gentility*, than, with their feeble energies, they possibly could have done in any other way. By this remark, far be it from

\* See Riddell's Geological Report.

me to design the slightest imputation on the accomplished, the meritorious, but unfortunate merchant, who, in these untoward times, has lost his all.

What were formerly called the *learned* and *liberal* professions ingulf multitudes in profound oblivion, who, like the foregoing class, have vainly imagined that a name or a license, conferred by persons in authority, would make their fortunes. These persons serve only to degrade their professions, and to destroy public confidence in the few of their brethren who have the talent and learning to comprehend, and the conscientious integrity honestly to discharge, the duties of their calling. Even the sacred functions of the clerical office are sometimes rudely seized by unhallowed hands, which have proved recreant to the handles of the plough, and from no better motive, than that they imagined the labors of the pulpit to be less irksome. Far be it from me, again I say, to speak, or even to think unkindly, of the amiable, the modest, the excellent young men, who, from mistaking their calling, or, from some other unforeseen impediment, fail of success. My remarks are designed for those who have failed from sheer hatred of labor.

Many other instances might be pointed out, of persons who have avoided the pursuits of agriculture, from the vain hope of averting that doom, which requires of man, that "in the sweat of his face he should eat his bread." These might be drawn, from high officers, who gormandize on the stores of government, and the whole tribe of vermin, who nibble in the public crib, down to the miserable vagabond, who skulks from house to house, like a stray dog, sponging daily subsistence from the reluctant charity of his neighbors.

But even the class devoted to agriculture is, by no means, exempt from the fear of labor. The truth of this proposition is so manifest, that it is somewhat difficult to decide, where we should begin with its proof. Who has not heard many of this class lamenting their lot, as hard, and wishing it had been cast in some other occupation? Let us suppose a traveller passing among us, whose design is honestly to learn the present condition, and future prospects of our agriculture. In the first place, perhaps he would be struck with the perishable nature and imperfect structure of our fences, and their unfitness, in many cases, for the protection of our crops. On inquiring for the reason of this, he might learn that there is some excuse for it in the fact that our law renders it necessary that every man should barricade his crops against destruction from the cattle of other people, instead of requiring the owners of animals to prevent their trespassing on the crops of neighbors. But still, he might wonder what other reason, beside the *trouble* of it, could prevent us from making this protection a better one. And he would suspect there must be some *hard thoughts*, if not *hard words*, among neighbors. He would also find, in this neighborhood at least, a great many gates, and the most of them in such bad order, as to cost *honest* people much trouble in shutting them. He would observe, that the plan long since antiquated in England and Scotland, of *in-field* and *out-field*, is still generally kept up. The out-fields in which the growth of corn and oats is *attempted*, not manured, not

clovered, and almost as poor as the patches of land and fields thrown altogether out of cultivation, which produce nothing but poverty-grass, broom-sraw and young pines. The in-fields, or tobacco lots, on which all, or nearly all the manure of the farm is applied, and which still generally receive not half enough, and which produce tobacco, wheat, and generally, of late, clover, serve to show what the land is capable of under complete management. On learning the reason for this arrangement, he would find, that we deal on credit—that the big bill of the merchant, or *part* of it, and many other bills have to be paid, out of the proceeds of the tobacco crop, and that were it not for this sort of compulsion, many might not manure half as much land as they do. Well might he conclude, that this *sweating* must be a terrible operation, in this land of ours, and that whatever our former talented representative\* in congress may have done, we are very far from having discovered the philosopher's stone, "pay as you go."

Let our traveller now come about the homestead, and he will find the dwelling-house, good, bad, or indifferent, as the case may be. The same may be said of the granary. The stable is apt to be *indifferent*, in many instances very bad—with a wet and filthy floor, and sometimes with mire so deep, at the door, as to require some hunger to induce a horse to encounter the entrance. Perchance, near the door, there may be piles of manure, long-rinsed by the rains, not actually put there to spoil, but thrown out to prevent the horses from being half buried, on lying down. This is admitted to be an extreme case, but for its slovenliness and cruelty deserves rebuke. Imagine our traveller gazing at an animal which might have stood, in bold relief, among Pharaoh's lean kine, begrimed with filth, and covered with ice, its hollow eyes mournfully turned towards the fodder-stack, with its hinder legs almost crossed, to present the sharpest edge possible to the wind, while its fore ones are stretched, with almost dying energy, as props. Were he from Yorkshire, England, or, our own South Branch of Potomac, he might feel some doubt about the *species* of this poor beast; he would feel certain, however, from its horns, its mournful lowing, and chewing its cud—if cud it had to chew—that it belonged to the *genus* "Bos." Such a picture as this, also, is very rare, but, I think, I have seen something like it. The owner of this animal means to improve his stock when he gets ready. But what is that our stranger is inspecting so narrowly? Its face is sharp, and it is sharp all over. It looks as if it had just passed through a rolling mill. He has read of the opossum, and he would like to take a look at its pouch. It roots, however, most furiously, and if it only had ears he would suspect it must belong to the hog family. Perhaps the owner of these animals sells corn. Some few instances of such misguided, left-handed economy may be found in our country, and as no other punishment can be inflicted on them except ridicule, they should have enough of that. I am happy, gentlemen, to feel assured, that such extreme cases of mismanagement are not to be found in our vicinity, or among our members,

\* John Randolph of Roanoke.

and to think that I perceive evidences of something like improvement. Let us earnestly endeavor to make these much more manifest. We have lost perhaps our best example of snug and judicious management, in every department of his business. You will readily perceive that I allude to our much valued and lamented friend, the late Edmund Eggleston. His example should long be remembered and imitated.

But let us introduce our traveller to the people. If he be fit to make observations at all, he has already observed, that success in agriculture, or indeed any thing else, depends much more upon them, as agents, than upon any thing on which they may operate.

Permit me to premise, that whatever reflections may be made, in relation to the young, arises from no unkind feeling towards them, but from a deep and mournful conviction, that their faults are produced, mainly, by errors of their parents and teachers, and errors in public sentiment.

The time was, when our boys were drilled in the rudiments of education, by sound scholars among the Episcopal clergy. Afterwards, by well qualified clergymen of other denominations.—These gentlemen rigidly inculcated on their pupils, that while they were *boys*, they certainly were not *men*, and, when necessary, they made them sensibly *feel* the truth of this. The impression was so *deep*, that even after they became men, they could hardly believe it. But, the conviction of the truth, in this instance, had a much better foundation in reality than it would, had it been assumed in advance of the fact.

In more modern times, somebody discovered that the clergy had too much important business to occupy every moment of their time, to spend any part of it in the education of youth; even before any safe and well adjusted scheme for their education could be devised.

Since this discovery, parents and teachers have got together, by advertisement, and every other conceivable mode, except the right one, that of a thorough knowledge of character. These teachers have, generally, been *knowing ones* enough, to find that the best way to become popular, and to get the most scholars, was to electioneer among the boys. Since then, the boys have been *knowing ones* too, have had their day—have been men—and some of them great men at fourteen. And, now, who does not see that they, in a great measure, rule the country?

It would be needless to give a detailed account of female education, in this country, in former times. Suffice it to say, that girls learned but very little at school. They were taught to read, write and cipher a little, by a matronly lady, in the family, or at school in the neighborhood, while very young; after which their education was chiefly domestic and maternal. The best of books were put into their hands, and they acquired a taste for them, and such women as they made immeasurably greater men than he who addresses you have told the world.

Our stranger in forming acquaintances begins with the young ladies. He first sees them at church. He is struck with their mode of getting there. He has somehow learned that their mothers were not too proud to ride to church, two on a horse. But now he sees a single sylph-like being, whom he could have easily imagined to

have flown there, issuing from a fine carriage, which cost her father more money than he can leave her as a legacy. He is a bachelor, and wishes to take the grand master's degree in life. He has a great horror of carriages, as their introduction brings with it all manner of luxury into a community. He begins to think this is not the country for him, but, like a prudent man, resolves to look further. Her dress, probably, cost more than her mother thus expended in five years, or her grand-mother in her life-time. He finds that they all come to church, in carriages, and that there are more of these on the ground than can be readily counted. He thinks he cannot settle in Virginia. But, the ladies are so beautiful! He must look further. On getting better acquainted, he finds that they are very accomplished in novel-reading, know something of grammar, geography, astronomy, geology, mineralogy, chemistry, in short, of almost every thing, except, perhaps, self-denial in expenditure, the source whence money comes, and the art of house-keeping. He makes his auguries of the future prospects of agriculture in our dear old dominion. "What a pity," he thinks, "that these fine girls have not been well grounded, in a thorough taste for the British classics generally, and especially such poets as Milton, Thomson, Young and Cowper!"

He turns to the boys. Many of these he might have taken for young Indians, had their skins been red, and their persons wrapped in blankets. Their hair, dressed a la mode Cherokee, hangs to their throats. Their velvet hands are covered with silk or kid gloves. Their dress, of the most costly materials, is fashioned in that style, which, but a few years ago, fixed upon the few who had the firm hardihood to assume it, the appellation of dandies. The supercilious glance and magnificent stride proclaim, more loudly than words, "who but we?" "We are the lords of creation!" And many of them carry out this sentiment; for they rule all about them. Such marvellous precocity amazes our stranger. But he perseveres in his investigations, and finds that they really are *men*, for they have their wine-parties, and card-parties, and sometimes spend more money in one of their nightly orgies, than their fathers make—as clear profit—in a whole year. And that they swear in oaths as long, and as senselessly arranged, as their own dishevelled locks. "What are their calculations?" he asks in amazement. Why, they expect, as soon as they become *legally* men, they will, by instinct, or, in some other mysterious way, be perfect prodigies, and feeling that they have, indeed, tasted of the tree of knowledge, they threaten, that if *the old man*, as the father is irreverently called, undertake to control them, they will march to Alabama or Mississippi, or be off to Texas. But how comes such deep depravity, at so early an age? It is found, oh horrid! that these parties are generally contrived by one or more older boys with the same profusion of hair on their heads, either natural or artificial, and a perfect mop of it on their faces and throats—and that all this is *their* diabolical work. Now, as to the fashion of the hair, I am not very particular, but when it becomes so perfectly the *rage*, as to give an impress to character, and exert an influence on morals, it deserves rebuke. It is true, I have



not learned that, since the days of Samson, length of hair had any connexion with strength, either of brawn or intellect, and if one does not fall into some delusion on this subject, it matters not much how he wears his hair. It would be very pleasing, however, to see our boys dressing in a style becoming the relation they sustain to society, and giving fair promise that they will prepare, in the best manner, for the high and responsible destinies which await them. They little think with what deep affection, and absorbing interest, they are regarded by their seniors and parents.

I have now, gentlemen, passed over, in a hurried manner, some of the remarks which I intended for this occasion. I designed to have said something about the condition of the poor, and their education, and the literary fund and its management. But, having neglected to prepare while leisure was allowed me, and being interrupted, in the short space which I allowed myself for preparation, I must now draw to a close, without finishing as I intended.

The picture, as far as presented, confessedly bordering on caricature, gives no bright prospect of the future condition of agriculture. The impress on the character of our youth, doubtless stamped by the wild schemes of wealth and aggrandizement, but recently indulged by their seniors, from the great expansion of credit, from magnificent speculations in the south-west, and from multicaulis—should cause us deep concern. The subject is full of pain. I may have erred, in attempting to alleviate this, by occasionally intermingling levity with my remarks. You doubtless all agree with me, in the opinion, that the prosperity of agriculture, and all the interests of our beloved country, depend more upon the character of the people, than on the physical advantages enjoyed, great as these are acknowledged to be. I intended also to present some remarks more directly applicable to ourselves, as the actors and conductors in the passing scenes of life. But time fails me. I have said enough, however, to show the awful magnitude of the subject, and its touching and intense connexion with every thing dear to our hearts.

May I, before closing, touch once more on a matter, which deeply concerns us all. The busy and malignant spirit of party seems to be diffusing gall and bitterness through almost all the ramifications of society. Not only is the ocean rolled by the high functionaries of government and distinguished leaders, but every pool is muddied, according as the petty agitator may desire to obscure his own designs of personal aggrandizement, or (as the phrase is) "manufacture capital" for his own purposes. Mighty whirlwinds are raised or a little dust kicked up, according to the protency and skill of the operator. Agitators in the north, and agitators in the south, are constructing a hedge of thorns and briars to sever our glorious union. Their occupation would perhaps be harmless, were their labors not drawn into requisition, and eagerly used, by men who seem to be better. Can agriculture flourish, when those, who should be its friends, are madly engaged in other things, which must tend to its ruin? I conclude, gentlemen, fervently trusting, that we will all earnestly lay these things to heart, and strive, through this society, to do much good to our country.

*Note.*—Having culpably procrastinated the commission of my thoughts to paper, until barely time enough remained for the purpose, and being interrupted by the necessity for an effort, which produced indisposition, I was thrown into such embarrassing hurry, as to produce confusion, in the developement of the plan proposed. I have nothing now left me, having consented to its publication, but to furnish the address, as it was delivered, for printing, appending a note, explaining the plan rather more clearly than could be drawn from the body of the address.

The leading idea was, that man, by a law of his nature, was doomed to labor. That obedience to this law generally insured him success. That disobedience or evasion of it was the usual cause of human failure. To this source may be traced the miserable condition of our agriculture, as well as of our commerce—(for it is evident, that if our products and, of course, our export staples were greater, the current of exchanges would, so far, turn in our favor.) To this source may be traced, the giddy pliability of our grown men, to be seduced into wild schemes of enrichment—and our boys, into alarming indolence, effeminacy and dissipation. The hardy sons of toil, who performed their own work, or attended to their own business, have mostly gone to the grave. Gentlemen nowadays, in moderate circumstances, who have neither public nor professional duties to perform, that they may take their own pleasure, employ what are called overseers. This, with most of the class, is a misnomer, for they often need more to be overseen than the negroes. An industrious, attentive, faithful overseer, is an honorable man, too seldom found. It is by the way becoming an object worth inquiry, where overseers are to be obtained. The sons of our worthy two and three hogshead men have, like the other boys, got to wearing broad-cloth coats, hair like Indians, and become gentlemen at fourteen. It may soon be deemed an insult to ask any man to be overseer. Most evils work their own cure. This may compel every man to be his own overseer, and thus bring good out of evil.

The subject of education and the condition of the rising generation is also one of thrilling interest. An ardent friend of the boys, I am for their own good, plotting rebellion against their government. I cannot abide the idea of an infant king. I could most cordially wish them to be laboriously preparing for the theatre of manhood, and for incomparably surpassing the deeds of their fathers. The example of Phaeton is too vividly recollected to trust them as yet with the reins. When they get ready, I shall most heartily unite in cheering them into the ranks.

For the girls, I feel the most delicate and the deepest anxiety, and am assured, that whenever their fathers and brothers shall fall into the right track, they will sweetly glide into that course to which the public welfare so loudly calls them.

The conclusion of the whole matter is, that the best agricultural periodicals may be published, the best essays may be written on the improvement of farming, the best implements of husbandry may be invented, the best races of stock introduced, philosophers may speculate, the ministers of our holy religion may preach, yet after all, appalling as the thought may be, we must WORK! Yes, we must WORK.

W. S. M.

## IMPORTANT DISCOVERY IN AGRICULTURE.

From the New York Evening Post.

In the *Phalange*, a Fourier paper published at Paris, September 8th, a novel discovery is described, which if true will work a great change in an important department of agricultural labor. It is communicated to the Paris print by Chas. Poillard and M. Bernard, who date their letter at Brest, August, 1841. It appears that while they and some of their friends, who farm their own estates, were engaged in conversation on the subject of agriculture, it was observed by one of them that that branch of industry was suffering more from the want of capital and enterprise than any other, and that nothing was to be done without manure, which was every day becoming more scarce and expensive. This remark led to an inquiry into the properties of manure, and particularly as to what provision nature had made in those uncultivated regions where there seems to be a vigorous and luxuriant growth, without artificial assistance.

"In observing nature unassisted, or unthwarted rather, by the hand of man, in vegetable reproduction, it is found that when the seed is ripe it falls upon the ground, and then the plant which has produced it sheds its leaves or falls itself upon it in decay, and covers and protects it from the weather until generation has commenced, and the young plant is able to grow up in health and strength and full development, to recommence the same routine of seeding and of reproduction.

"From this it follows that, in nature, every plant produces its own soil or *humus*, and that the earth only serves to bear the plant and not to aid or nourish it in vegetation. The nourishment of plants is thus supposed to be derived from *air* and *water*, *heat* and *light*, or electricity in different proportions, adapted to the different varieties of vegetable nature."

With this general notion in their minds, and considering wheat to be, in present circumstances, one of the most important vegetable substances, they agreed to try experiments, and in October last undertook the following operations:

In a field which had been sown with rye, because the land was deemed too poor for wheat, a plot of twelve square yards, untilled and left without manure, was carefully strewed over with the grains of wheat, and wheaten straw was laid upon it closely, and about one inch in thickness. In a garden, also, which had been neglected several years, a few square rods of earth were trodden over, and the surface being made close and hard, some grains of wheat were scattered on this hardened surface, and a layer of straw one inch in depth was carefully laid over it, and left, as in the former case, to take its chance without ulterior attention. And in order to make doubt impossible concerning the mere secondary functions of mineral earth in vegetable reproduction, twenty grains of wheat were sown upon the surface of a pane of glass, and covered with some straw alone, as in the other case.

The germination of the seed was soon apparent and most healthy in development. "The winter has been rigorous," say these correspondents, "for this part of the country, and the earth has sometimes been frozen in one solid mass to a depth of

six inches in the garden where the wheat was sown, and this has happened several times during the winter, to the great injury of many plants and even the entire destruction of some; while the spots protected by the straw were never thoroughly congealed, nor were the grains of wheat, though lying on the surface under the straw, at all affected by the cold. During the spring excessive droughts, prolonged and several times repeated, having prevented vegetation on the common plan from flourishing in healthy progress, while our little spots of wheat have hardly felt the inconvenience of excessive dryness, for the earth, protected by the straw, has never been deprived entirely of moisture, and our blades of corn were flourishing when all around was drooping and uncertain. To conclude, then, we have thoroughly succeeded in our practical experiment, and the wheat produced is of the finest quality. The straw was more than six feet high, and in the ears were 50, 60, and even 80 grains of wheat of full development, the admiration of all who saw them, and particularly those which grew upon the pane of glass, and which were quite as healthy and as large as those which grew upon the common earth. It must be observed also that there was not the smallest particle of earth upon the glass, and that the plants were left entirely to themselves, without being watered or attended to in any way whatever from the time of sowing to the time of reaping."

The cause of this success they think may be explained in the following manner:

"Straw being a bad conductor of heat, and a good conductor of electricity, maintains the root of the plant in a medium temperature, and prevents the earth from being deprived entirely of moisture. The moisture of the earth, or the substratum, being continual, facilitates the gradual and constant absorption of carbonic acid gas from the surrounding atmosphere, and hydrogen and carbon, the chief elements of nourishment to vegetables, are thus economized in regular supplies where they are constantly required, and pass in combination with oxygen from the roots up to the stems and branches of the plants in which they are assimilated, and the oxygen throws off in exhalation from the leaves. The straw decays but slowly, and thus furnishes its substance by degrees to the young plant in due progression and proportion, (such as the silicious ingredients, for instance, of the pod or capsule,) so that the decomposition of the straw corresponds to the four phases of fermentation in progressing from the *saccharine* to the *alcoholic*, the *acid* and the *putrid* states, analogous to those of *infancy*, *budding*, *youth*, and *seeding* of the plant.

"We observe that our blades of wheat have but a very few roots, and those are short and hard, something like a bird's claw; and this agrees with the remarks of Mons. Raspail, who states that the most healthy plants in ordinary vegetation have the least exuberance of roots and fibres.

"Another important observation also, is, that weeds, and parasitical vegetation are prevented by this method, for the straw chokes every other plant but that of its own seed. Many other interesting observations might be made on these experiments, but we refrain at present from obtruding on your readers; but if any of them wish for further information on this subject we shall will-

ingly afford them every facility. The importance of the general result will easily become apparent without further comment, and a revolution in the present modes of agricultural labor is a necessary consequence of this discovery. No tillage will now be required, nor any artificial stimulants in manure and other more or less expensive combinations with regard to soil and culture. In fact, it would be tedious to enumerate the various advantages that may result in practice from this casual experiment, and therefore we proclaim it simply to the world that all may profit by it."

As this experiment can be easily tried, we hope some of our farmers will put it to the test, and communicate the result. We shall certainly try it on a small 7 by 9 lot of ground, which is the largest that is vouchsafed to a dweller in the city.

#### GROWING POTATOES UNDER STRAW.

For the Farmers' Register.

Some remarks in a late number of the Farmers' Register, relative to growing potatoes under straw, induce me to make the following statement:

Many years ago, my father had a bank in his meadow (near Philadelphia) which could not be irrigated in the common way, on account of the thin, porous soil resting on a bed of loose sandstone. The water from a fine spring had been turned on, but it sunk down and disappeared. Recourse was then had to flooding. An embankment sufficient to hold all the water that could collect in twelve hours, was constructed; so that, every night and morning, a tide swept over the surface, and good crops were obtained. In process of time, however, the flood-gate ceased to perform well, and weeds of little value for hay got possession of the bank. A new plan was determined on. Late in spring, when vegetation was well advanced, we laid potatoes among the grass and weeds at proper distances, and then covered the whole with straw about a foot in thickness. The product was good, though the season was dry; the grass and weeds were smothered and destroyed; and the year after we had a fine crop of clover.

D. T.

Greatfield, Cayuga co., N. Y., 11 mo. 2, 1841.

#### ARISTIDA OLIGANTHA. POVERTY GRASS. HEN'S NEST GRASS.

(Subject continued from p. 613.)

For the Farmers' Register.

In addition to the two species of *Aristida* described at page 613 of the current volume of the Farmers' Register, *A. oligantha* is entitled to notice as being the poverty grass of the district of country above tide water. Its specific characteristics are that the flowers are solitary and distant; and the awns very much elongated, and divaricate rather than contorted. It is the most conspicuous and luxuriant species of the whole genus. In the month of September it attains its full size, which is about 15 to 18 inches in height; covering whole fields of impoverished land, and, apart from the associations with which it is con-

nected, exhibiting a pleasing and wavy appearance. It flourishes on the same soils which produce *A. dichotoma*, *A. gracilis*, *A. purpurascens*, &c.

When the seeds have become matured, they are exceedingly annoying to persons walking through patches of this grass. They insinuate themselves into one's clothes, from which they are with difficulty detached. When the plant is in flower, it has been supposed by some farmers to afford nutritious grazing to stock. It is then, at any rate, very tender and luxuriant. It is an annual, and flowers in September.

All the species of *Aristida* are doubtless included in the provincial name of poverty grass: for to an unpractised eye it is only by a somewhat careful examination that the specific differences are detected. And before the period of flowering, it is still more difficult to distinguish them.

The range of this species is not well defined by botanists. According to Eaton it is a southern plant, though it is not described in Elliott's Botany of Georgia and South Carolina. From the previous notices published in the Farmers' Register, it is probably not common in the tide water region of Virginia. In Chesterfield, Goochland, and the adjacent counties, it is by far more common than any of its congeners.

T. S. P.

Chesterfield county.

#### GROUND OF PREFERENCE FOR DIFFERENT KINDS OF WHEAT. SURFACE MANURING.

Absence from home during the latter part of October, and continued indisposition since, have prevented our paying attention to several of the past communications at the time of their appearance, when comments would have been better timed, and perhaps more satisfactory than now. These several omissions will now be supplied.

We entirely agree with our valued correspondent, Mr. A. Nicol, in considering it an important *desideratum*, that some of our most experienced and successful wheat farmers shall present their opposite views of preference for each of sundry different kinds of wheat as the supposed best crop. And without designing to exclude, or to slight such information or opinions from any other source, we would especially request the opinions of Messrs. Hill Carter of Shirley, John A. Selden of Westover, and William B. Harrison of Brandon, because understanding that these gentlemen prefer different wheats, and because the judgment of each of them deserves high respect. We could name many others from whom opinions on this subject would be no less valued, but of whose preferences of kind nothing has been heard.

In our own general practice for more than the twenty last years, we have adhered to the "mountain purple straw wheat," and, on the whole, have preferred it to any other kind. Sundry othe

kinds have been tried as part of the crop, because supposed at the time to be preferable; but each has been afterwards abandoned, and the mountain purple straw again sown exclusively. Our preference was founded on the belief that this kind, on a general average of years, was at least as productive as any, and that the grain was better able to withstand wet weather during harvest, than any white wheat, and perhaps most of the red wheats. Any *later* wheat would be more liable to be injured by rust; and any *bearded* wheat is less manageable or safe in reaping, shocking, and thrashing by machines. The grain is supposed by experienced millers to make the richest and best flour—though of course not so white, and therefore not so high-priced as the flour of the thin-skinned and more tender white wheats. These, our grounds of preference, are stated to invite correction of our judgment, and opposing views from better sources of information.

If the writer of a recent communication (signed S. at p. 628,) had been a reader of the earlier volumes of the *Farmers' Register*, he would have seen many confirmations of his opinion, (though still deemed in his region both novel in practice and heterodox in theory,) of the propriety of applying putrescent manures to the surface. We have for seven or eight years considered the advantage as settled by sufficient experience; and the *rationale* or theory as being perfectly satisfactory. And if it be as improving to soil or crop, or even *nearly so*, to apply manure to the surface as to plough it under, it offers a gain of 50 to 100 per cent. in the value of the general manuring operations of a farm, in the greatly increased convenience. Under the formerly supposed necessity for ploughing under manures to prevent their waste, they could be applied but at certain times, and under certain conditions of manure, and of crop. But, if it be permitted to apply to the surface, the application is not only almost always more easy and convenient, but the manure may be laid on when too coarse to be easily ploughed under, or when the state of the land or the crop would not permit ploughing. For cultivated crops, and short or partially rotted manure, we should care very little whether it were ploughed under just before planting, or given as top-dressing very soon after; and considerations of mere convenience would induce the choice of either mode. But, perhaps the very best application of coarse manure is on clover, (or other grass) not designed to be grazed, or mown. The manure gives as much and as early benefit to the clover as it could to any tillage crop; and the

increased growth of the clover serves to speedily cover and shade and keep moist the manure, so as to induce its speedy rotting; and as fast as it rots, its enriching parts are taken up by the growing crop, and through its increase, the quantity of manure is multiplied for the use of the next grain crop. If pine leaves are laid over wheat after the sowing and harrowing, and before the plants come up, there is not only a slight early benefit from this coarse and poor manure, but a valuable protection from the winter cold, both to the wheat and the clover seed sown thereon. So far as this can be done, at so busy a season, it is the best mode of using the rakings of pine land. The trash might be raked up and left in heaps during the previous autumn and winter, as it rots very slowly in heaps.

The greater economy of applying the manures to the surface furnishes the explanation of *all* that is true and beneficial reported in the article at page 643, as a new and wonderful discovery made in France. We have no question that the facts therein stated are much exaggerated, and some of them altogether mistaken, or falsely stated. Of these, are the statement of the growth of wheat on *a pane of glass*, and without the aid of soil, and that of two inches thickness of wheat straw serving to prevent the growth of all weeds. But, rejecting such exaggerations and false statement, there is no doubt of the established truth of the general principle which is there presented as a new discovery; that is, that a covering of vegetable matter will serve well as manure, and also (if thick enough) preserve the moisture and mellowness or tilth of the soil, and smother weeds. Two inches thickness of straw could not however effect any of the latter objects.—Ed. F. R.

#### GREEN-SAND OF JAMES RIVER.

For the *Farmers' Register*.

I yesterday saw, at Evergreen, a striking proof of the beneficial effect of the application of this manure. About 10 years ago, a strip of land about 15 or 20 steps wide, running through a portion of a field quite uniform, there being no perceptible difference of soil on either side, was dressed with green-sand at the rate of about 30 bushels to the acre. The field had been previously marled, and since the marling never a bushel of putrescent manure has been applied in any shape. The green-sand was applied for experiment's sake, and, as well as the proprietor remembers, in the fall succeeding a wheat crop, on the first year's growth of clover. The land has been for several years back cultivated principally in wheat and clover. The clover seed has not been sown for several rotations, this strip is now

well set with a uniform thick and vigorous growth of young clover, while on either side, the clover is much more scattering and far inferior. The wheat stubble (wheat was cut from this field this summer) would show that the wheat in this strip was decidedly better, I may almost say 50 per cent. better without the fear of exaggeration, than outside of it. The carrot weeds stand almost twice as high as on the neighboring land, and though the vile fox-tail rears its dingy head in great profusion on either side, little or none is perceptible here. The above observation may be interesting to those owning deposits of green-sand.

EDMUND RUFFIN, JR.

November 4th, 1841.

#### AGRICULTURAL AND HORTICULTURAL SOCIETY OF HENRICO—(2d meeting.)

(Extracts from the proceedings.)

##### *Report of the committee on stallions.*

The committee appointed to award the premium to the stallion best suited for the get of saddle or harness horses, beg leave to report, that six were exhibited, and the committee unanimously agreed that the bay stallion Cleveland, the property of Gen. Carrington, and got by imported Cleveland out of a Roanoke mare, was entitled to the award.

R. B. HAXALL, Chairman.

October 20th, 1841.

The award of \$15 was therefore accordingly paid.

The following reports were then presented:

##### *Report of the committee on gardens.*

The committee on gardens respectfully represent, that of all the fine gardens in the vicinity of Richmond, only one has been offered for their examination, and they sincerely regret that they are compelled to decline awarding a premium to that.

JOHN CARTER, Chairman.

Richmond, October 20, 1841.

[And accordingly no premium was awarded upon the subject of gardens.]

##### *Report of the committee on corn.*

To the Executive Committee, of the Henrico Agricultural Society:

The undersigned, a committee appointed to examine the fields of corn, of such members of the society, as might be disposed to compete for the premiums to be awarded, state, that they were requested to view the fields of the following persons, to wit:

The Rev. J. H. Turner, Messrs. G. W. Bassett, Walker Tomlin, R. C. Page, Jas. Gordon, Isaac A. Goddin, Josiah Smith, John N. Shields and Sterling I. Crump. Having examined the corn fields of the gentlemen aforesaid, we now report: That it is our unanimous opinion, that Mr. W. Tomlin's is the best field of corn, Mr. S. I. Crump's the second best, Mr. I. A. Goddin's the third, and Mr. J. N. Shield's the fourth.

We deem it proper to state, that Parson Turner's corn field has been visited by a violent wind, and was very much injured, and it gives us pleas-

ure to state, that all the corn fields, viewed by us, are considered very fine.

EDMUND CHRISTIAN,  
EDWIN HILL,  
WILLIAM A. GAY.

Henrico, October 20, 1841.

Whereupon the premiums were accordingly, paid—viz.: \$15 to Mr. Foster—\$12 to Mr. Crump—\$10 to Mr. Goddin—and \$8 to Mr. J. N. Shields.

##### *Report of the committee on roots, &c.*

To the Executive Committee of the Henrico Agricultural and Horticultural Society:

Your committee to award the premiums on roots, &c., here beg leave to state, that they have viewed the crops of every individual who has expressed a wish to compete for the premiums, (at least so far as has come to their knowledge,) and report as follows:

That the crops of turnips that came under their observation, were those of Messrs. Francis Staples, Thos. S. Dicken, Joseph Rennie, William H. Richardson, and New and Hydecker; and they give it, as their decided opinion, that Francis Staples, esq., is justly entitled, to premium No. 1; General William H. Richardson, to premium No. 2; and Thomas S. Dicken, esq., to premium No. 3. The crops, taking the premiums, were really very fine, (being the ruta бага turnip,) and so were the others of their kind very good, being the red top and white Norfolk.

Your committee farther report, that their attention has been drawn to but one crop of beets, which crop, in their estimation, was, in every respect, richly deserving of a premium—having obtained an immense size, notwithstanding the ravages of its enemy was marked heavily upon them—premium No. 1, on that crop, they award to Rev. Jesse H. Turner.

Your committee have farther to state, that they have been called upon to notice the potato crop of Messrs. John Carter, Isaac A. Goddin, Edwin Hill, Thos. S. Dicken, James Gordon, and William H. Richardson; and, after the most critical examination in their power, by digging in various places, (for they were mostly in the ground,) they decide that, in their judgment, John Carter, esq., is entitled to premium No. 1, on that crop; and General William H. Richardson, to premium No. 2. Of this crop, your committee would observe, that the yield appears to them to be ordinary, both as it regards size and quantity.

On the cabbage crop, your committee regret to say, that they cannot award either of the premiums, as offered by you on that crop, to any person. The prospect of Messrs. New and Hydecker, for a large and fine crop was very flattering, until the worm attacked them, which almost totally destroyed them.

On the pumpkin crop, your committee would report, that they were highly gratified with the exhibit made by Messrs. Robinson and Turner, their eyes having never before beheld a heavier and more abundant crop than that of Mr. Robinson, throughout his entire field. Your committee think they would hazard little in saying, that the pumpkins in the cornfield, is fully equal to one-third of that of the corn crop, which certainly does Mr. Robinson great credit, being a very

fine one. Your committee therefore, with pleasure, award to Anthony Robinson, esq., premium No. 1, and to Rev. Jesse H. Turner, premium No. 2. **ROBERT CARTER PAGE, Chairman.**  
*Richmond, Oct. 20th, 1841.*

The premiums were awarded and paid accordingly, viz: for turnips, \$8 to Mr. Staples, \$6 to Mr. Richardson, \$4 to Mr. Dickinson; for beets, \$8 to Mr. Turner; for potatoes, \$6 to Mr. Carter, and \$5 to Mr. Richardson; and for pumpkins, \$6 to Mr. Robinson, and \$4 to Mr. Turner.

The 2d premium for beets, equal to \$6, was awarded to Mr. Ed. Hill, on the following certificate.

At the request of Mr. Edward Hill of King William, I have this day laid off half an acre of his lot, (of 3 to 4 acres,) now in beets, a part of which I saw pulled up; and having taken the tops off, weighed them, and find the product to be on the half acre, 16,044 pounds, or 32,088 pounds to the acre, equal to 534½ bushels (of 60 pounds to the bushel) to the acre. Given under my hand this 18th day of October, 1841.

JOHN LUMPKIN.

Gen. Wm. H. Richardson, from the select committee, presented the following interesting report, on the best cultivated farms:

*Report of the committee on farms.*

Wm. H. Richardson, Warner W. Gay, and Francis Staples, *Committee.*

This committee having discharged the duties assigned them, respectfully offer the following report:

The first farm visited by them was that of the Rev. Jesse H. Turner, president of the society, who handed us a written statement, which we here insert:

"To the committee appointed to inspect farms, and to award premiums on the same.

"Gentlemen: I offer my farm for the premium. You will of course inspect the premises, and judge for yourselves. But it has occurred to me, that it will aid you in your arduous duty, if I, as the proprietor, state some of the leading facts pertaining to the same.

"My operations as a farmer began in the year 1827. In that year I bought 30 acres of very poor and even exhausted land, intending at that time never to own another foot of land. But, after improving the above piece, I became interested in farming; and by additions time after time, generally of other small pieces of similar poor land, my farm now consists of 192 acres. Of this about 180 acres are cleared. My object and effort has been to improve my land, and get it in cultivation as fast as I cleared it; but in this I have failed by about 20 acres of low and very wet land. I now have about 160 acres in actual cultivation, all of which has been improved, and most of it highly.

"In improving my lands, I have used lime to a small extent; but my main dependence has been putrescent manures. At first I applied about 50 cart-loads to the acre; I now put on about half that quantity. I always apply it broadcast, and I greatly prefer that this should be as a top-dressing to the grass lands.

"My crops from the beginning have been grass, corn and oats, to which I have recently

added beets and turnips. About half of the cultivated land (say 80 acres) is in grass of some kind, mostly clover, timothy and herds grass, of which the usual product is somewhere about 3,000 pounds to the acre. The balance is one-half in corn; the other in oats. The usual product of corn is about 8 barrels to the acre, and of oats about 3,000 pounds. This year the product of the latter has been much less.

"My preparations for taking care of my crops are ample, so much so, that no part of them, not even the corn tops, or shucks, are exposed to the weather; but all are put under shelter. In this I find great convenience, both in putting away, and in taking out for use.

"The force employed on my farm consists of five regular hands. Besides these I have a sixth, but he is employed almost exclusively with the wagon, or in the garden. I also hire labor to the amount of about four additional hands, during harvest.

"My stock consists of three horses, six mules, four work steers, three milch cows, a bull, and four other young cattle. Of hogs, I have a considerable number; but not having taken a census of them lately, I cannot, at present, state how many. Of the condition of my stock, and of the provisions made for their comfortable accommodation, the committee will judge for themselves. I will just add, that I am still manuring with all my might. For this purpose, I resort to my farm pen, my stables, my hog pens and cattle shelters. All these I endeavor to keep well littered. How much manure I get from these sources, I cannot state precisely, but it is very considerable. Last year I tasked myself with the manuring of 10 acres from my home resources. I more than did it. This year I have given myself a task of twenty acres, and I think I shall do it. Besides this, I haul a large quantity of manure or coal ashes from town, so that, with the whole, I usually manure from forty to fifty acres during the year. Under this system, my lands so far from deteriorating, are perceptibly improving. I greatly need an additional force to cultivate them. The inclosures, and indeed the general condition of the farm, and all its appurtenances, are submitted to the inspection of the committee. J. H. TURNER."

To this we add, that Mr. Turner's farm, as might be expected, is in a very high state of productiveness; it lies in the immediate neighborhood of the city of Richmond, the nearest point being little more than one mile, and the most distant, scarcely more than two from the town. This has afforded the proprietor great advantages in obtaining manure, to which object, from the first, he seems to have devoted his ample pecuniary resources, with great sagacity and energy—inasmuch that according to his estimate, not less than 150 two horse cart-loads of manure, has been applied to every acre in cultivation.

Buildings.—A very handsome and well arranged family mansion with all the requisite offices for convenience and comfort, all in the best order. Comfortable houses for domestic servants and farm laborers. Stable pretty good. Hog sties—two ranges containing 22 pens partly roofed, erected during the last winter and spring. Cattle sheds are now building, and will be completed in a short time. Three large houses con-

structed for the purpose and capable of containing we suppose 4 to 500,000 weight of hay.

A very good garden.

**Crops**—Detail given in Mr. Turner's statement, to which we add, that the beet crop is superior to any. The turnip crop, though good, inferior to some we have seen.

**Cultivation**—Of the corn crop appears to have been defective, but that crop is a good one, and has growing with it a good crop of pumpkins. Other crops and garden in good order.

**Stock**—Horses and mules good. Cattle ordinary.

**Hogs**—Two boars and three brood sows with two litters of pigs, all of the Berkshire stock and superior animals, obtained at great expense from Mr. Allen's celebrated stock at Buffalo, with the exception of the premium boar President, which was purchased of Mr. A. B. Shelton. For one of the sows 12 months old Mr. Turner paid \$100. A large stock of other hogs, very good.

**Fences**—Chiefly of plank, with some thorn hedge—the former, as we think, not sufficient for complete security.

**Keeps farm accounts**—Agricultural papers taken—*Farmers' Register*, *Cultivator* and *Southern Planter*.

#### *Farm of Ro. Carter Page.*

287 acres—200 of which is in cultivation—the rest in fine forest. Much of this farm is rich, having been heavily manured by Mr. Shepherd, of whom Mr. Page purchased it, and the improvement continued for some time by Mr. Page—but the whole is susceptible of the highest improvement.

**Buildings**—A spacious and convenient mansion of brick, with all necessary offices, including comfortable accommodations for laborers, a fine barn and stables, good corn-house, with stables for cattle underneath—**Fences** good.

**Crops**—Corn, oats, tobacco, turnips.

**Cultivation** of the corn crop very good, though much of the fodder will be lost, from the necessity of attending to the tobacco, which Mr. Page cultivates this year for the first time. Turnip crop ordinary. Tobacco—A large portion has already been cut; that which is now standing, shows that the crop was luxuriant; but it seems to have sustained much injury from worms. Garden appears to have been well cultivated during the earlier part of the year, but latterly neglected—the tobacco crop engrossing most of the farm labor.

**Stock**—Four work horses, two carriage horses, two saddle horses, and a very fine horse colt of the Canadian stock. Cattle—six milch cows, good—three oxen not seen by the committee. Hogs—a large stock, including a Berkshire boar and sow—the latter a fine animal.

**Labor**—Six men and one boy.

**Keeps farm accounts.**

**Agricultural papers taken**—*Cultivator* and *Southern Planter*.

#### *Farm of James Gordon.*

35½ acres, 17 of which are cleared and in cultivation.

**Buildings**—A neat and convenient dwelling, good kitchen, corn-house.

**Stable**—An excellent cow-house, with loft above it for forage.

**Fences**—Chiefly of plank, and very good.

**Crops**—Corn, oats, hay, pumpkins, cucumbers, &c., for market as pickles. Good garden.

**Cultivation**—Of the crops that we saw, very good.

**Labor**—None but his own.

**Family** of six white persons—hires a woman this year.

**Stock**—One good work horse, 2 milch cows and a heifer—sells butter at a good price.

13 hogs, which will afford him a sufficient supply of pork for his family.

One breeding sow and 5 pigs improved stock.

**Means** in progress for raising manure very good, and we were pleased to observe the attention Mr. Gordon is now paying to that important branch of husbandry.

Mr. G. takes no agricultural papers and keeps no farm accounts. He cannot, therefore, say precisely what is the clear profit on his farm; but the entire support of his family is derived from it, leaving him over and above all expenses more than \$100 annually to lay up.

Here is an extraordinary instance (in our state at least) of what the steady industry of one man may effect. The committee as yet have met with nothing equal to it, and they are satisfied that Mr. Gordon has rather underrated his clear profits. It is evident, however, that he would have been much aided by the experience and practice of others, as we find detailed in our agricultural journals, and we accordingly recommend to him to secure such aid without further delay.

#### *Farm of Thomas S. Dickinson.*

163½ acres, about 100 cleared and in cultivation, balance in wood.

**Buildings**—A comfortable dwelling, good kitchen and lodging room for laborers, dairy, poultry house, barn, a large stable with spacious loft for forage, shed adjacent for wagon, cart, and for work in bad weather, a large and excellent cow-house with hay-loft above, good corn-house, with shed for tools and agricultural implements, "A place for every thing and every thing in its place," good garden, good fences.

**Crops**—Corn with pumpkins, oats, clover, hay, Irish and sweet potatoes, turnips, ruta бага and white Norfolk; all the crops on the ground fine.

**Cultivation**—Excellent. This farm is generally in good condition and in a state of steadily progressive improvement, fully commensurate with the means of the proprietor; plots of grass well set, wherever the land is suitable.

**Manure**—A large supply raised on the farm. Stables and cattle-yards well littered. Supplies occasionally obtained from Richmond in exchange for wood. Of this compost for top-dressing is prepared.

**Labor**—One young man and 2 elderly men; one of the latter hired.

**Stock**—4 horses and a colt, 4 milch cows, all in fine condition, 4 sheep, 40 hogs of all sizes, including 2 superior brood sows with litters of the finest half Berkshire pigs the committee has seen. Raises an ample supply of pork; has sold this year pigs to the amount of \$82.75.

**Takes the *Cultivator* and *Southern Planter*.**

**Kept regular farm accounts until the last year,**



when, and during the present, the practice has been interrupted by ill health. Cannot, therefore, state profits at this time over and above the maintenance of his family of 8 white persons, which is derived solely from his farm. The profits have latterly been much reduced by the low price of produce. But he has annually a surplus of corn, oats, hay, potatoes and turnips for market, beside the produce of the dairy, which is conducted by his daughters, and is sufficient for their expenses. Has purchased in the last 10 years, and paid for from it, 100 acres of his farm and 1 negro man, besides repairing and adding to his dwelling and building, stable, cow-house, corn-house and sheds.

#### *Farm of Edwin Hill.*

The committee not finding Mr. Hill at home did not make a minute or particular examination of his farm. He has lately purchased it, and this is his first year's cropping. We noticed fine crops of corn, tobacco, potatoes, with some good beets and turnips, also a good garden, and generally an aspect of neatness and order which indicate the good farmer and manager. This farm is evidently improving under good management.

#### *Farm of Wm. Miller.*

210 acres, 80 in cultivation.

**Buildings**—a good brick dwelling, kitchen and laborers' houses of wood.

**Good garden**—good barn and stables.

**Cultivation**—We noticed here the finest crop of tobacco we have seen, especially a piece of probably one acre, which has been cultivated by Mrs. Miller, with her domestic servants. So very superior is this portion of the crop, that the committee are satisfied it can scarcely be surpassed on the finest tobacco land; and, as it is now understood, that the committee on this crop has not acted, this committee, although it is not within their prescribed duty, unanimously recommends, that the premium offered upon tobacco be awarded to Mrs. Miller.

**Crops**—Corn, oats, tobacco—Corn crop pretty good—Tobacco, as already stated, very fine—Some good clover, and the farm is in an improving condition, though not so rapidly as, considering its vicinity to the town, it might be; means in progress for making manure on the farm good. The tobacco here, as in other places, seems to have absorbed a large portion of the farm labor; but that crop has been admirably managed.

**Labor**—Five men and one woman.

**Stock**—Four horses, six head of cattle—including three milch cows; hogs.

Keeps no farm accounts, and takes no agricultural papers. This farm not entered for premium.

#### *Farm of Anthony Robinson, Jr.*

When the committee came to inspect this beautiful and highly improved farm, they did not find the proprietor at home, and consequently had not the advantage of a detailed account of his farming operations. Mr. Robinson is justly considered one of our best farmers, and we were much disappointed at not meeting with him—but we were received and conducted over the farm by his faithful servant and foreman Charles, whose at-

tachment to his master, zeal in his service, and honest pride, were manifested in a manner exceedingly gratifying to the committee.

The following is the result of our examination:

**Buildings**—A neat and convenient family residence, with all requisite offices for complete comfort—including good quarters for laborers and domestic servants. Barn, stables, carriage house, cattle sheds, several hog sties, hay house, all in good order.

**Excellent arrangements for saving manure**, of which a large supply seems to be raised upon the place. A fine large garden, stocked with fruit trees and many choice varieties of foreign and native grapes.

**Crops**—A very fine crop of corn, with the finest crop of pumpkins\* we have seen. A large crop of turnips, all well cultivated. Active preparations for laying down grass land.

**Stock**—the largest and finest stock of hogs we have seen, with the exception, of Mr. Turner's Berkshire, and Mr. Dickin's best brood sows and their pigs.

A large stock of cattle is kept, but the committee did not see them.

**Fences**—All of plank, and the best we have seen.

This farm not entered for premium; but it is one of the handsomest, best cultivated, and most highly improved, that has fallen under our inspection.

#### *Farm of Isaac A. Goddin.*

140 acres—About 90 open, and chiefly in cultivation.

**Buildings**—A large and excellent mansion-house, with appropriate offices; barn, stables, cattle sheds but ordinary—A fine spring, very neatly and tastefully improved by walling and turfing, &c., and covered by a good house.

**Garden** pretty good.

**Crops**—Corn, oats, hay, pumpkins, Irish and sweet potatoes—all good. We saw here the most productive species of corn, apparently, that has fallen under our observation—having generally two, and often three good ears upon a stalk. It was originally procured, as we learn, from the county of Caroline; and, in the opinion of this committee, is eminently worthy the attention of corn-growers.

**Cultivation**—Very good indeed—particularly of the corn-crop. Mr. Goddin's meadow land lies beautifully, and is all susceptible of irrigation, with very little expense. Much of it has recently been ploughed up, and re-seeded in a manner which commanded our admiration. We cannot, however, forbear expressing our opinion, that the proprietor would find it much to his interest to topdress his grass lands with coal ashes, which his vicinity to the town seems to present great facilities for doing. We observed some marl on the margin of the meadows; but it has not been test-

\*This pumpkin, of the largest variety, was introduced into the neighborhood by Mr. Robinson, (as we learn from a member of the committee,) and obtained from the lower country. It is an abundant bearer, and worthy the attention of cultivators. We are informed, that the sale of the seed is a perquisite allowed to Charles, of whom a supply may be had.

ed, and no application of it has yet been made to his farm.

**Labor**—Six farm hands, a part of them said to be inferior.

**Stock**—Four farm horses, one handsome young stallion, eight head of cattle, generally ordinary, but among them we noticed a very fine young cow and bull of great promise, about 15 months old. Hogs inferior—does not attempt to raise pork, considering it more advantageous to purchase. Mr. Goddin purchases no manure from the city, but raises a large quantity on the farm. His attention is chiefly directed to business which requires his daily presence in town. Notwithstanding this, his farm is highly creditable to him as an agriculturist.

#### *Farm of Crutchfield Crump.*

The proprietor not being at home, we did not learn the number of acres, or see any stock.

**Buildings**—Dwelling house, kitchen, stable and one or two other houses, generally out of repair. Fences tolerably good.

**Crops and cultivation**—Corn, oats, turnips, potatoes, stubble land very well set with clover, and the corn crop, taken as the labor of one man, very fine and has been well cultivated.

**Labor**—(as we learn from a member of the committee,) none but his own.

The proprietor seems to be aware of the necessity for enriching his land, and we observed a good deal of manure for the apparent means of collecting it, though some of it was wasting from neglect, supposed to be unavoidable. The general condition of Mr. Crump's farm does not entitle him to any of the premiums, but the crops afford evidence of great industry on his part, and he seems to have the spirit of improvement. Therefore, as a reward to his industry, and to encourage him in the improvement he seems disposed to make, we recommend that the society award him a gratuity of \$10.

#### *Farm of Major Miles Gardner.*

—Acres—Finely situated for improvement, and has an abundant supply of marl convenient to it. We did not find the proprietor at home—nor any thing particularly worthy of note.

#### *Farm of Thomas Jennett.*

**12 Acres.** The committee accidentally called at this little place on the last day of their examination, and found every thing upon it in such admirable order that they feel bound to report it.

**Houses** are comfortable and in good repair, his land improved, and means in operation for continuing and increasing the improvement. Good crops of corn, pumpkins and potatoes.

**Stock**—Two good horses, two cows and some very fine hogs, especially a litter of three-fourths Berkshire pigs. Makes corn and forage sufficient for his family and stock.

Mr. Jennett is a cripple, unable to move about without crutches, and cannot himself perform the usual labor about a farm. But it is evident that his time and attention are fully occupied and well directed. He hires a colored man to do the work that he is unable to perform himself, and employs much of his own time in wagoning wood to the city. The committee regards this as a case of extraordinary merit, and they unanimously recom-

mend the worthy individual to the favorable consideration of the society, and that a gratuity of \$12 be awarded him.

#### *Farm of John N. Shields—Poplar Vale.*

**130 acres**—handsomely divided by live hedges of cedar into convenient fields of meadow pasture and tillage, with a fine lot of forest land.

**Buildings**—A handsome mansion house of brick, brick kitchen, with all other requisite out houses, in good order, including stables and cattle sheds, a fine and well arranged farm yard, and large house for storage.

**Crops**—Corn very fine indeed, and well cultivated, oats, hay, turnips, and potatoes; fine garden.

This beautiful farm has but recently come into the possession of the present proprietor, whose progress thus far indicates that he is soon to take rank among the distinguished agriculturists of the society. His farm is finely watered, and by that and its vicinity to the town is convertible at small expense into a dairy farm.

When the requisite time shall have been afforded him for improvement, if not sooner, we doubt not the proprietor will be a successful competitor for more than one of the society's premiums.

The foregoing reports are given in the order in which the farms were examined from time to time; as we were enabled to devote ourselves to it during a period of several weeks, and including every farm entered for premium, besides several that were not. We confidently expected and intended to extend our examinations to the farms of several members of the society resident in other counties; but it was finally impossible to do so, and we therefore very reluctantly yielded to the force of unavoidable circumstances which limited our labor to the county of Henrico.

We particularly regret our inability to visit the farms of Mr. Corbin Warwick, in Goochland, and Mr. Lewis E. Harvie, in Amelia—of the improved system of husbandry on both which we had heard so much as to satisfy us that a faithful report upon them would have been highly acceptable to the society.

We trust we may be permitted to say for ourselves, that we have endeavored to perform the duty assigned to us in such a manner as to promote the objects of the society in advancing agricultural improvement, and in rewarding unpretending merit, industry, and good management.

In awarding the premiums offered by the society upon the most highly improved and best cultivated farms, this committee has been governed by what they believe to be a principle of vital importance laid down by the executive committee in fixing the amount of the premiums, to wit: "Reference being had to the means (as well pecuniary as others) of the proprietor for improvement—the amount of labor employed upon it—the means resulting from the vicinity of the farm to the city, &c. The object being to place the industrious small cultivator with limited resources, and no other labor than his own, upon the same footing as the largest cultivator with ample resources."

The committee, therefore, unanimously and without hesitation award the first premium of \$25 to Thomas S. Dicken.

In like manner, we award the second premium of \$20 to James Gordon.

As to the third premium, the committee were unable to agree upon an award.

Upon a subsequent and more thorough examination, which we felt ourselves bound to make of the farm of Mr. Edwin Hill, we award the fourth premium of \$10 to him, and recommend his coin as the same kind cultivated by Mr. Goddin.

We observed, in the course of our examination of several farms upon which we have not reported, many evidences of great industry, directed without judgment or skill, and in a great degree neutralized, by reason of total ignorance of agricultural improvements and the application of labor. Still the spirit of industry is there, and some have caught the spirit of improvement too; are becoming sensible of the necessity for improving their houses and enriching their lands; but are uninformed as to the best means within their own reach of effecting that object.

It must seem incredible to those who have not witnessed it, that a man with a wife, and eight, nine, or ten children to provide for, and who, for that end, taxes his physical powers to the utmost, from the beginning to the end of the year, should yet be, or appear by his practice to be insensible to the inconvenience, discomfort, and risk of living in a house which has probably been occupied by several generations, without repair, and which, with every thing around it, is in the most neglected and dilapidated condition. Yet such is the fact, and, in many instances, with industrious, respectable, and meritorious men, who, it would seem, have no conception of the importance, and the economy too, of first attending to the security and comfort of themselves, and of every thing around them.

It is not necessary for us to offer a remark upon this mistaken and destructive policy—we hope to see the influence of the society applying the remedy, wherever there is industry and intelligence for it to act upon.

In conclusion, we are happy to have it in our power to report that, in the course of our examinations, we had the satisfaction of noticing a more general spirit of agricultural improvement than we were aware of. There is a fine field for the operations of the society, and every encouragement to perseverance in the cause. But there is much to do, and we believe one of the great principles of success is to be found in the encouragement of a class of cultivators, who heretofore seem to have been entirely overlooked. It is the men who guide their own ploughs, drive their own produce to market, and, in times of danger, shoulder their muskets and take the field.

A distinguished prose writer of our own country, satirically remarked of the people of a great commercial city of the north—that there, “the lawyer looks down upon the merchant, the merchant upon the grocer, the grocer upon the green grocer, and the green grocer upon the apple woman—who don't care a straw about any of them.” We trust it is not so among us—but these sturdy citizens of ours who have as much sterling merit and independence of character as any men on earth, who regard with indifference or contempt the trappings of wealth and station, and ask no favor but of the Almighty—have

been left to drudge on, generation after generation, without an effort to improve or to aid their agricultural labors. They do not want industry, but they want the light of agricultural science and improvement, which the necessity for constant toil and their own limited resources place beyond their reach, but which could so easily be imparted to them by those who are favored with knowledge, leisure and wealth.

These, and other considerations which address themselves forcibly to the patriotism and liberality of our more favored people, this committee would, if in their power, most earnestly endeavor to impress upon the wealth and intelligence of our old mother Virginia, throughout her extended borders. Give our people the lights of practical knowledge, improve our system of education, our agriculture and our mechanic arts, and the Old Dominion will once more be in the ascendant.

Respectfully submitted, on behalf of the farm committee,

WM. H. RICHARDSON, *Chairman.*

October 20, 1841.

The president then, according to the awards in the said report, presented to Capt. T. S. Dickinson, premium No. 1, of \$25—to Mr. James Gordon, No. 2, of \$20—to Mr. Edwin Hill, No. 3, of \$10—and to Mr. Thos. Jennett a gratuity of \$12. But for good reasons presented to the meeting, it was determined not to pay the gratuity recommended to Mr. Crutchfield, and the subject was recommitted to the same committee.

Captain Richardson, then, from the same committee, presented the following supplemental report:

#### *Supplemental report.*

The undersigned feel bound in justice to the objects the society has in view, to offer the following supplemental report, which they do without the knowledge or concurrence of their colleague, Mr. Staples.

It is stated in our general report, that the committee could not agree upon the award of the third premium, and it is proper that we should give the reasons for that disagreement.

The undersigned, having heard much of the improvements on Mr. Staples' farm, wished to examine and report upon it. To this he objected from feelings of delicacy as a member of the farm committee, alleging, with much diffidence too, that there was nothing upon it worth reporting.

It was not until near the close of our examination, that the undersigned, calling for Mr. Staples at his own house, were so much struck with the almost magical improvement every where presented to view, that they felt it their duty to examine and report upon it. The following is the result:

**Buildings**—A neat and handsome dwelling and offices, excellent stables, corn-house and cattle sheds, all recently erected by Mr. Staples, and every thing about the homestead in fine order; enclosures good, partly of plank, very neatly put up.

**Crops**—Upon a farm which three or four years ago presented an aspect of hopeless sterility, there have been produced this year fine crops of corn, oats, clover and herds grass, hay, turnips and potatoes. We observed several large collections of ashes and stable manure brought from the

city, which, with the preparations on the place for increasing it, will afford the proprietor a large supply for his next year's operations.

Stock—Horses in fine order—cattle we did not see; but we saw some half Berkshire pigs, equal, as we think, to any that can be produced, as also a large and fine pen of store hogs for pork.

Respect for the feeling of delicacy manifested by Mr. Staples forbade our asking such details, as are embraced in the reports on other farms, and were the less necessary. The evidences of his merit as an improving and enterprising agriculturist were before and around us, and upon these we have no hesitation in assigning to him a rank with the first farmers of the society.

The undersigned, therefore, being a majority of the farm committee, unhesitatingly award to Mr. Staples the third premium of \$15, assuring the society at the same time, that it is much below his deserts.

WM. H. RICHARDSON,  
WARNER W. GAY.

October 20, 1841.

The third premium of \$15 was then unhesitatingly paid to Mr. Staples.

According to the recommendation in the report on farms, the society also presented to Mrs. Wm. Miller a premium of \$10 for the best crop of tobacco.

#### EUROPEAN FARMING.

From the Farmers' Monthly Visitor.

I think that the superiority to be observed in British and Flemish agriculture is to be attributed to the nice adaptation of crops—the perfect system that prevails in every department—the free outlay for manures to invigorate the soil—the patience that never tires in the completion of a task once undertaken, and the industry that in no kind of weather, at no season of the year, fails to remember and perform its tasks and duties.

England is remarkable for confining to certain districts, the productions which flourish best in those soils. Thus the light sands of Norfolk are best adapted to turnips, fed off and followed by barley and clover; therefore in that country the rotation of turnips, barley and clover prevails. It was by this course that Mr. Coke (Earl of Leicester,) reclaimed from perfect barrenness his splendid estate at Holkham. Warwickshire is famous for beans as a first course, followed by wheat. Lancashire for potatoes as a first crop, wheat and timothy following.

Not less perfect is the system: each one has his part and his duties assigned to him—he is there at all times, and in all weathers, and he stipulates to be only there. And this system pervades all things on the farm.

Upon a farm in Surrey, where I spent six pleasant and agreeable months, I had opportunity to see the use and the profits of systematic farming. It was a hay farm, of less than two hundred acres—the rent paid, about \$2000. The whole farm, except the garden, was mowed. After the hay was taken care of, the fields were all shut up until there was a good feed upon them. Then Mr. R. went to the nearest fair and purchased large beeves nearly fat. In these fresh,

luxuriant pastures, where the grass grew almost fast enough to render not fabulous Sir Boyle Roche's story of the kite thrown into an Irish meadow over night, hidden by the grass next morning, the beeves became in a very short time fit for Smithfield or Old Leaden-hall. After a few day's rest, the fair was resorted to for a second drove of cattle of smaller size, but in good flesh, which soon shared the lot of all fat oxen, and became the roast beef of old England. The fields were no longer in a condition to make beef, and therefore were to furnish the predicament "nearly fat" to take the "first bite" in some unfed meadow. The fourth course was a herd of small Welsh cattle to be merely improved. Fifth and lastly came sheep to be kept till the meadows began to start in the spring, when they were sold, and the meadows shut up.

To recruit this farm, the carts which took the hay to market returned laden with manures to be used as a *top-dressing*. When not bringing back provisions for farm use, I think I may say they always came back with manures. I had some years ago in my possession a book, which was borrowed by some kind friend or other, who liked it so well that he forgot to return it. This book gave the best account of the English practice with respect to manures, of any I have ever seen. It was said in that book that five thousand tons of manure had been applied in one year on a single estate. I know that the quantities are immense, and that the lands in that country are kept in a high state of fertility by the axiom impressed on the husbandman that *food is as necessary to the earth as to the human body*. But do not think that I have selected a pattern farm for the subject of the foregoing remarks. It was in all respects only a medium farm. There could not be the same opportunity for the more elaborate practices of husbandry that there is in large Yorkshire farms. It is my opinion that some of the best managed farms in England were on the estates of the Duke of Buckingham at Stowe, in Bucks. It is, however, the fashion in England to patronize agriculture: heaven grant it may become so here. You can form no idea with what ease an American can introduce himself to the English, if he is fond of farming. The gift of a few ears of Indian corn to the Horticultural Society, brought me tickets and invitations without number to their gardens and fetes at Chiswick.

#### SUBSOIL PLOUGH.

From the Farmers' Cabinet.

Sir,—I, too, was so fortunate as to be present at the trial of ploughs at the late Exhibition of the Philadelphia Agricultural Society, and can bear testimony to the superiority of the centre-draught plough for the purpose of cultivating the land preparatory to sowing, but whether it is equally suitable for stirring fallowed land, when it is necessary that the furrows should be set more on edge than the drag might take a greater hold upon them, remains a question, which ought, however, to be solved. Why does not Mr. Prouty take means to show the powers of his plough under various circumstances and in different

soils? The premiums he has obtained, and the desire which it is natural he should feel to bring his plough into notice and competition with others, ought to operate as a strong inducement to him to use every means in his power for this purpose.

But my present object is, just to say, the subsoil plough, with its operations, have convinced me that the system of stirring the hard pan is about to become the value of the rent of our land to us; and the thing is at once so complete and manifest, that it must have struck every beholder with surprise. Many had their doubts as to the feasibility of turning the next furrow-slice on to the loosened earth of the subsoiled furrow, thinking it probable that the work may be harder and the land might not lie so smoothly; but such was not the case, for the furrow was turned as easily and laid as evenly as though no subsoiling had been practised. But, only just think for a moment of the effect which the system will have on the tap-rooted plants; and more especially on the growth of the potato, when deposited on the loosened soil of the furrow and covered with manure, which will be carried down by every rain to the tap-roots of the plants imbedded in it, instead of the sets being laid upon the hard pan of the soil, at the depth of a few inches only, as they now are. I should expect that it will be the means of adding many thousand bushels to our crops, especially in a time of drought, enabling us to cope with "the Green mountain boys," who find it by no means an uncommon occurrence to turn up from 1000 to 1800 bushels to the acre! Where are these subsoil ploughs to be obtained? JOHN DAVIS.

Lancaster County, Pa.

#### FRUIT TREES.

From the Farmers' Cabinet.

The practice of draining, so necessary for the well-being of every species of vegetables, is found of superlative importance to orchards having unhealthy subsoil, the presence of which is easily shown by moss growing on the branches and a coarse and open bark. The Boston Cultivator states, that a Mr. Chinny has found by experience that the water in a retentive subsoil was so injurious to the growth of his trees, as to justify the expense of ditches cut from two to three feet deep to carry off the water, which, collecting in the subsoil, paralyzed and corrupted the tender roots. At the bottom of these drains is left a water-course about eight inches deep, covered with flat stones; on these some brush is thrown, and the whole is filled with the earth that had been dug out in forming the drain. Thus has he secured the most entire success on land that before had baffled all his attempts to raise an orchard. A periodical liming is of the greatest benefit to an orchard; so also is the washing of the trunk and branches of the trees with strong soap-suds, which also might be applied to their roots, opening the ground for the purpose.

Pruning should be attended to, and practised annually, sparingly at first, or great injury may arise from the infliction of large wounds and the exposure of the trees to violent winds during winter, before the young wood had shot forth to protect them.

#### PROPER ARTICLES FOR EXHIBITION AT AGRICULTURAL SHOWS.

From the Farmers' Cabinet.

*Mr. Editor*.—The remarks by Joseph Stille, in the last No. of the Cabinet, on the late Exhibition of the Philadelphia Agricultural Society, contain matter for serious reflection. Although not present on that occasion, I have seen the same propensity for large cattle exercise an undue influence on the minds of many elsewhere, and in no place, perhaps, are persons wholly free from that partiality. The most likely thing to convince of the error that almost all have imbibed is, to impress upon them the axiom in stock-breeding, to begin with *dam the best*; relying more upon the female than the male for the production of large cattle of good proportions. It is easy to obtain large calves from overgrown bulls, but unless the cows be large also, the offspring is scarcely ever well-formed; often indeed are they found of a cross-bred, coarse, lanky character, as disgraceful to the breeder as to the sire. And these remarks were exemplified at the late Exhibition at Syracuse, where some of the smallest and neatest of the thorough-bred Devon bulls were best known and most highly prized, as stock-getters of the greatest value; and I must say, I consider the breeders of short-horns peculiarly blameable in this respect—pushing on their animals by means of the highest keep to mammoth size—all wrong, depend upon it.

I have been much pleased with some very judicious remarks contained in a late number of the New England Farmer, on this subject, and believing that a large proportion of your readers would coincide with the writer in the view which he has taken, if they had the opportunity to become acquainted with them, I have copied them for publication, should you approve. The editor says—

"Is there not reason for supposing that people are accustomed to exhibit at these fairs the *largest* squash, pumpkin, or ruta baga—the *largest* calf—the *largest* steers, and every thing the *largest* of its kind? Is size the principal thing regarded? And do the members of committees make *size* the criterion of merit? Such questions should find no place in our columns if we did not suppose they must, in too many instances, be answered in the affirmative. Now, what we wish to see is the *best*, not the *largest* merely. And it often happens—it *ordinarily* happens—that the very large calf is a coarse-made animal, unfit for a breeder. There are exceptions to this remark, and yet it is true as a general statement; many members of committees regard form and fineness of make in fixing upon their awards, still we never attended a show where we could feel satisfied that *size* was not too much regarded. If in our judgment we are correct, the influence of cattle shows tends, in some degree at least, to the introduction of a large

and raw-boned breed of cattle, which no well-wisher to the farming interest would ever desire to encourage. Other things being equal, we should prefer, as a matter of profit, to be the owner of a cow or bull that was but little above the medium size, rather than of one extraordinarily large. Fineness of bone, symmetry of form, apparent thrift and hardiness of constitution—these are the important points. And in relation to young animals, intended to be kept as breeders, we should regard it as highly important to know something of the pedigree, so that we might *guess* whether the good points were merely accidental, or whether they were fixed in the blood, and would be likely to reappear in the offspring. A very finely formed bull, which happens to come from coarse parents, will, in but very few instances, produce his like; and for this reason we should make the parentage a matter of importance; not that we should be anxious to encourage in a region of short pasturage, the general introduction of "Herd Book" animals—but we should like to know that the parents for two or three generations back had been well-formed and profitable in our climate, and upon such feed as is usual here.

"When we come to fruits and vegetables, the matter is still worse. If a squash, from some mysterious and un conjectured cause, happens to become a *mammoth*, or to be curiously distorted in form, that is the one that must be carried to the show, while the cart-loads that are finely-formed, of good quality, and the causes of whose excellence can be explained and reapplied by the producer and others—these are left at home. So it is, to some extent, in relation to many other vegetables and to fruits.

"Now what we wish to see is, a fair specimen of a good crop, and accompanying that, we desire a statement of the mode of culture, so that we may obtain instruction that will be of service to us in our own agricultural and horticultural operations in future years. The mammoths, the dwarfs, the deformed, which nature has made in sport, and which cannot be produced again by any particular processes of cultivation—these things are mere curiosities, and convey no useful information. The fairest, finest and best specimens (not in all cases the *largest*) are the proper ones to be exhibited on these occasions."

Z.

Nov. 10, 1841.

#### THE MISSOURIUM, OR LEVIATHAN SKELETON.

The last number of the Farmers' Cabinet contains a communication on this subject, in which is the following passage:

"In the last number of the 'Farmers' Register' it is said: 'The Missouriium, or skeleton of a double-sized mammoth, which has been exhibiting in the western cities, turns out to be a counterfeit, or at least so far factitious, as presenting a larger size of the *well-known* Mastodon, of which this is, in truth, a specimen.' Now, from what I know of the gifted editor and proprietor of that first of all our agricultural publications, I am quite sure that it would only be necessary for him to take one glimpse of the object in question,

to enable him to declare—which he would do fearlessly, although he might seem to some to have committed himself in the above expressed opinion—which however cannot be *his own*, for he is a man who never makes up his mind until he has had an opportunity of forming a correct judgment—that the bones are real, and go to show an animal hitherto undiscovered and unknown."

However little deserved may be the highest compliments paid in this passage to us and our publication, the writer has done nothing more than bare justice in acquitting us of all intention of detracting from true merit, or being unwilling to make amends for any such unintentional wrong. The short statement which is quoted above was part of our weekly summary of news, and was taken (in substance) from a paragraph in one of the northern newspapers, which has been widely republished, and of which a full and trustworthy refutation now is presented—and which we take pleasure in admitting to be such. The gigantic skeleton has recently been exhibited publicly in Philadelphia; and the strict scientific scrutiny to which it must there have been subjected, as well as the confirmation of two articles in the Farmers' Cabinet, would alone be enough to satisfy us that the enormous size and new character of these remains had not been increased by art and deception. We regret to learn that this skeleton has already been shipped for Europe, in pursuit of a more enlightened curiosity and of better pecuniary reward, than this country has furnished.

A previous and longer article in the same number of the Farmers' Cabinet gave a portrait of the skeleton, and an account of it from the pamphlet of its discoverer and proprietor, Mr. Albert Koch, from which we extract the following description and statement of dimensions.

"This gigantic skeleton measures 32 feet in length and 15 in height; the head measures, from the tip of the nose to the spine of the neck, 6 feet; from one zygomatic arch to the other, 4 feet; from the lower edge of the upper lip to the first edge of the front tooth, 20 inches; from the front point of the lower jaw to the first edge of the front tooth, 8 inches; from the edge of the upper lip, measuring along the roof of the mouth to the socket of the eye, 3 feet; from thence to where the Atlas joins the head, 10½ inches. The whole number of teeth is eight—that is, four upper and four lower, not including the two tusks. The two upper fore teeth are 4 inches broad and 4½ inches in length, and are situated in the head in such a manner that they slant towards the roof of the mouth, inasmuch that their outer edge is 1½ inch higher than their inside edge. The back teeth in the upper jaw are 7 inches in length, and where they unite with the front teeth, they are, like those, 4 inches broad, and from thence run narrower back until they end almost in a point. The formation of the nose is very peculiar: it consists

of a bony substance interwoven with cells, and presents a broad, flat appearance: it projects 13 inches over the lower jaw, and ends in two nostrils, which are somewhat raised on the face. This nose rests partly on the roof of the mouth and partly on the upper lip, which latter is somewhat arched on both sides, and forms a ridge in the centre.

"As I was successful in finding the right tusk solid in the head when I first discovered it, and as it remained fixed in its socket during its excavation and transportation over a very rough and wilderness country, I am enabled to give a correct and indisputable description of the position and situation which the tusks occupied in the skull of the animal during its life. They were carried by him almost horizontally, bending somewhat down, and coming with their points up again; their length is 10 feet, exclusive of 1 foot 3 inches which forms the root, and is hidden from the eye of the observer, as it is concealed in and under the skull. It is necessary here to remark, that the tusks are remarkably large in proportion to the size of the head, and also that their roots are perfectly firm and solid, so as to leave only space for the nerve. The body of those tusks has been a formation of coarse ivory, partaking somewhat of the nature of bone—so much so, that it will again unite and become whole after an injury; which is proved by the fact of the right tusk having a large scar, where it had been severely injured. As soon as the tusks leave the interior of the head, which takes place opposite the chin, they run parallel on each side of the nose, sinking down to the edge of the upper lip, until they reach the outer edge of it; from thence they make a sudden bend and run from both sides in a horizontal position, each forming somewhat of a semicircle. Measuring those tusks from the point of the one to the point of the other, following the curvature, is 21 feet; the distance across the head in a straight line, from point to point of the tusks, is 15 feet.

"Especially remarkable on the lower jaw is a protuberance; which is immediately situated over the *posterior mental foramen*, from whence it proceeds out of the *ramus* in a horizontal position; its point is somewhat bent down, inclining back; its length is 2½ inches; its diameter at the root is 1½ inches. I consider this protuberance peculiar to the *Missourium*, as I have never seen a similar one on any of the great number and variety of fossils I have disinterred or examined, or of animals of the present race, and as yet I have never heard it mentioned by other naturalists. Another peculiarity of this protuberance is, that it possesses points resembling thorns. I am of opinion that the above described protuberance was the location of some remarkably strong muscles attached to the lower lip, that gave it in a great measure the strength and faculty of a proboscis. This wise provision of nature has been necessary to the animal, as the upper part of the head is destitute of this appendage, or, at most, has had a snout not larger than that of the South American tapir. The whole length of this, the lower jaw, is 3 feet 1 inch; the greatest height to the condyle, 1 foot 7 inches; the extreme height to the coronoid process, 1 foot 5½ inches; the height of the *ramus*, 7½ inches; the length of the posterior molar, 7 inches; its breadth, 4½

inches; the length of the second molar, 5½ inches; its breadth, 4 inches.

"*Measurement of the different bones contained in the skeleton.*—Each clavicle, 2 feet ½ inch; and 7½ inches in its extreme breadth. The first rib, 2 feet 3 inches in length; 6 inches in its widest part; the longest rib measures 5 feet 6½ inches in length; the shortest rib, 2 feet 4 inches in length; the largest of the dorsal vertebrae, 2½ feet; the scapula, or shoulder blade, 3 feet 1 inch in length, and 2 feet 7 inches in breadth; the humerus or fore arm, length 3 feet 5½ inches; its greatest circumference 3 feet 3 inches, and its smallest part measures 2 feet 7 inches in circumference; the ulna is 2 feet 7½ inches long; the radius is 2 feet 3½ inches long; the carpal articulating surface is 5½ inches broad; other articulating surface, 6½ inches. The pelvis measures from the anterior superior spine to the edge of the pubis, at the symphysis, 3 feet 7 inches, which gives a total breadth of the pelvis of 7 feet 2 inches; the circumference of each bone of the pelvis is 13 feet 4 inches.

"The femur, or thigh bone, is 4 feet ½ inch long, 9½ inches in diameter; in the middle of its shaft the neck of the thigh bone is 7½ inches in diameter; the head of this is 8½ inches in diameter. The transverse diameter of the articulating surfaces or condyles of the femur, is 10 inches; that is, each condyle measures 5 inches.

"*The tibia and fibula, or leg bones.*—The tibia is 2 feet 4½ inches long; 11 inches broad at its superior portion, and 8 inches at the inferior part; its diameter in the middle of the shaft is 5½ inches. The fibula—the whole length of this bone is 2 feet 6½ inches.

"There is a process connecting the tail with the os sacrum, which is 1 foot 8 inches in length; the said process is composed of six joints, which are inseparably joined together. Each of these joints is 3½ inches in length; the one adjoining the os sacrum is 7½ inches in breadth, but the remaining five joints of the process are rather narrower. The tail is composed of thirteen vertebrae, and is very short in proportion to the body of the animal, its whole length measuring only 2 feet 7½ inches, but has been very broad and flat, and possessed of great strength.

"The fore-foot has four toes and a thumb; the longest toe measures 1 foot 8 inches; the shortest, 1 foot; the thumb, 7 inches. Each toe is possessed of four joints, and the thumb of two. The smallest and last of the joints of each toe, shows plainly that it was armed with a nail; the nails of the right foot turned out towards the right, while those of the left were reversed, and turned towards the left. The hind-foot is much smaller than the fore-foot; it has also four toes, but is destitute of the thumb. Its longest toe measures 1 foot 2 inches; its shortest, 9½ inches. Both the fore and hind-feet have been webbed.

"*Peculiarities of the bones.*—All the bones, without exception, are firm, and contain no marrow; I believe the marrow was superseded by an oily fluid, which circulated through the bones.

"All the vertebrae are remarkably narrow, and must have given the animal a superior degree of action in the back; this is more particularly observable in the vertebrae of the neck, which gives it the appearance of being very short. The two posterior vertebrae adjoining the os sacrum are



united in one, which appears to have given the back more elasticity.

"The ribs are remarkably slender and short, in proportion to the size of the animal, and have had a great deal of cartilage attached to them: the six first are the strongest, and all have the singular peculiarity of standing half-reversed in the body; that is, the edge of the rib bends in towards the intestines, and the opposite edge outwards, showing great lateral action.

"*Comparison of the leviathan with the mastodon.*—The most striking difference between the leviathan and the mastodon, are, 1st, the leviathan had no trunk, therefore could not be classed under the proboscidea genus; 2d, its toes were armed with claws or nails, and this circumstance prevents its being classed with the hoofed animals, to which class the mastodon belongs; 3d, the leviathan has 24 dorsal vertebræ and 48 ribs, together with two collar bones or clavicles; whereas the mastodon has 19 dorsal vertebræ and 38 ribs, and no clavicles; 4th, the scapula or shoulder-blade is materially shorter in the leviathan than in the mastodon, also the ribs are much smaller; 5th, the dental system at the first view somewhat resembles that of the mastodon, but upon a close examination, the observer will perceive that the teeth of the leviathan are much smaller in proportion to the maxillary bones than those of the mastodon, and also better calculated for masticating softer substances.

"*Supposed habits and nature of the animal.* The animal has been, without doubt, an inhabitant of water courses, such as large rivers and lakes, which is proven by the formation of the bones: 1st, his feet were webbed; 2d, all his bones were solid and without marrow, as the aquatic animals of the present day; 3d, his ribs were too small and slender to resist the many pressures and bruises they would be subject to on land; 4th, his legs are short and thick; 5th, his tail is flat and broad; 6th, and last, his tusks are so situated in the head that it would be utterly impossible for him to exist in a timbered country. His food consisted as much of vegetables as flesh, although he undoubtedly consumed a great abundance of the latter, and was capable of feeding himself with the fore-foot, after the manner of the beaver or otter, and possessed also, like the hippopotamus, the faculty of walking on the bottom of waters, and rose occasionally to take air.

"The singular position of the tusks has been very wisely adapted by the Creator for the protection of the body from the many injuries to which it would be exposed while swimming or walking under the water; and in addition to this, it appears that the animal has been covered with the same armor as the alligator, or perhaps the megatherium."

#### HIVING BEES.

From the Farmers' Cabinet.

I am glad that due attention is likely to be paid to a very profitable and pleasing branch of husbandry—I mean bee-keeping, and cannot but approve many valuable articles that have lately appeared in the Cabinet on that subject—the letter from a bee-keeper in No. 2, for September, in

particular. But is it not strange that so little has been said by any of them on the best mode of securing the swarms on leaving the hive, as also on offering them facilities of colonization by which they might be induced to "pitch their tents" nearer home, and thus prevent the loss of hundreds of the finest and strongest of the swarms, which are continually escaping into the woods, or enriching our distant neighbors with their treasures? At best, all the directions which I have seen or heard of, were most clumsy and uncertain, until I happened to meet in an eastern paper with the following, which are deserving record in your pages, and will, I have no doubt, be practised the next season with profit to many of your readers.

The author says: "As the season for swarming approaches I cut an evergreen, such as fir or spruce, above 6 or 8 feet high, and trim off all the branches on one side close to the tree, so that it may be laid flat on the ground; the lower end, or but, is sharpened like a stake, and set in a hole made by an iron bar in the ground about 10 or 16 feet in front of the hives. Swarms will very seldom seek any other resting-place, when a bush like this is at hand. When a swarm leaves the hive I say nothing, but stand and look on, until they become still and quiet on the bush. I then carefully raise the bush from the hole, and lay it flat on the ground, and place the hive over them. If the limbs on the upper side interfere, I press the hive down and lay a stone or some heavy substance on to keep it in its proper place, till the swarm takes possession, which is generally in ten or fifteen minutes. In this way I have never lost a swarm, and have frequently hived a swarm and removed them to the bee-house among the old hives in one hour from the time of their leaving the hive.

"Another way is as simple, and, as far as I have tried it, equally sure. I take a board wide enough to set a hive on, and 2 or 3 feet long; bore a hole in the centre, and drive in a pin, 1 or 2 inches in diameter, and 8 or 10 inches long. I then take two small cords, and fasten the end of each to the corners of the board, so that they form a loop at each end of the board, about 2 or 3 feet long. This board, thus prepared, I suspend from two stakes in front of the hives, with the pin pointing downwards; taking care that the stakes slope towards each other, so that the board may not touch at the end. Around this pin the bees will cluster, and when they get still, unhook the cord from the stakes, turn the board over carefully, lay it on the ground and set the hive over it. In this way much time and trouble may be saved; for there is no need of watching for swarms—only provide such resting-places, and there you will find them. I have left a swarm suspended under the board, as last mentioned, through the day, and found them safe in the evening, and hived them after the other labor of the day was past. I think, on the whole, this method the best, as they seem more contented under cover of the board than when more exposed, and not so likely to take wing before they are hived."

B.

## MEDIUM-SIZED VS. LARGE HOGS.

From the Western Farmer.

*Mr. Editor,*—You are aware that I am now, and have been ever since 1920, extensively engaged in pork-packing in this city; and I feel that I may without presumption lay claim to not a little experience in the business. It is fully as much to my interest, and that of every one else engaged in curing pork for market, as the interest of the farmer, that the very best breeds of hogs should be scattered over the country.

When I first entered into it, the pork brought to us was produced from the same miserable race yet to be found through much the greater part of the West. It yielded us little lard, and the sides were unfit for mess or clear pork—too thin, and only fit for bacon. The first improvement we had was the little chunky China hog—a perfect mass of lard—hams light and too fat—though the waste of offal was trifling. The next we had was the large Warren county hog, requiring years to mature, and then coming to us of an enormous weight—great waste of offal—the hams too large and badly shaped, as was also the shoulder—and the sides, nevertheless of their great size, were thin in proportion. They were still a great improvement. The crosses of these and the Russia and Byfield, in the hands of some of the more judicious breeders, produced a very excellent hog—and we who were the purchasers, were anxious for any improvement on the unprofitable wood hogs usually raised.

Though, as I have remarked, so long engaged in the business of packing, I had paid but little attention to the breeding of hogs, though always keeping a few of the best I could find, on my farm, and improving them to the best of my ability. It was not until some of the part-bred Berkshires were brought to us from Butler and Warren counties, that I was struck with the great improvement they were on anything I had yet seen. The perfect manner in which they were fattened—their extraordinary length of body, and the thickness of the side meat—their small, yet thick, fleshy shoulders—the great weight and handsome form of their hams—the great yield of lard, and little waste of offal, either of inside waste, or head and bone, proved to me that they were a something entirely different and altogether superior to any other breed within my knowledge. On making further inquiry respecting them, I found them equally advantageous to the farmer and drover, as to the pork-packer. Prolific and easily kept; maturing early and fattening kindly to as great weights as were desirable; stamping their own character strongly on any other breed with which they might be crossed; and travelling well to any reasonably distant market.

I had before this been breeding hogs for sale, and seeing, at a glance, the great advantage it was going to be to me in my packing business, to have such a hog as the Berkshire in general use, I at once engaged in it largely.

True it is, that I cannot give up my farm, and my attention and capital, to the breeding of fine stock, without a prospect of making money by it; but that was the secondary object I had in view—my pork-packing business was of the first importance to me. I saw and dreaded the efforts that were made to introduce an extremely large

hog into Kentucky, for I had about this time transferred my pork business to that state, and had gone to very great expense in erecting an extensive establishment back of Covington, and intended making my entire purchases in the state. We can make no use in this market of animals weighing from 400 to 600 lbs., even though they may be well fattened. A hog of the proper form and quality of meat, that matures at ten or twelve months old, so as to fatten properly, and then weighs from 200 to 300 lbs., is the sort for which we will give the highest price, because it yields us the greatest profit. And most assuredly it will also pay the farmer best. We have no population to supply, that will consume large, coarse, indifferently cured meat. Our principal demand is for city and family use, both here and in the cities of the south and east. The ham is with us the most valuable part of the hog, and the celebrity of those cured in Cincinnati is now great. This part must be heavy without being large—round, thick and plump; the flesh, though principally lean, yet marbled with fat. Next to the ham the lard and side meat yield us the greatest return—the former must be abundant in quantity and fine grained, which never is the case with any hog until he has somewhat matured; the latter must carry its thickness throughout, having no thin flanky parts, and must be fat—and last we rank the shoulder and the jawl.

Many of the Boston and Richmond dealers, and those from the other cities in the east and south, come here annually to have meat packed; they all prefer such a hog as I have described, and will buy no other if they can help it. How the drovers, who are represented as driving to Richmond and Charleston, and as preferring the largest sized hogs, can possibly dispose of such animals there, I cannot understand. Nor how meat of a size that I know from experience cannot be cured, even with the aid of cool cellars, *here*, can be kept *there*, surprises me. Think of a pair of hams, Mr. Editor, weighing 148 lbs., in the climate of Charleston, or Richmond, or Baltimore! They would indeed require to be cut in two—and then what a sightly object!

Still some regions of country may require a larger hog than others; and to supply those who may think so, Mr. A. B. Allen, now on his way to England, will import for me some of a size sufficient to suit any taste. For my own part, and for my use for packing, I want neither an extravagantly large hog, nor yet a very small one. A hog that has to be fed two winters, never will pay first cost; if he can be had of sufficient size without wintering at all, so much the more profit. A spring pig killed in the fall at 200 lbs., net, will evidently pay better than if the same hog had been kept over winter, and reached the second fall 600 lbs., net.

I have been speaking now as a pork-packer, not as a breeder; and what I have said, I say in all sincerity. I have no desire to injure the business of any other breeder of improved hogs, nor to prevent their continuing their improvements to as high a point as they please. But I do regret to see gentlemen of science and experience going back to a large, coarse hog, such as the Woburn, Irish Grazier, or Leicester, when they can procure a breed so infinitely superior—the improved *Berkshire*.

JOHN MAHARD, JR.

## HORN-AIL.

From the Farmers' Cabinet.

*Mr. Editor,*—Having persuaded myself that the practice of boring the horns and applying spirits of turpentine, &c., in the disease called horn-ail, (which is so very prevalent in America,) is entirely wrong in principle, and has the most pernicious consequences in practice, I deem it not improper to recommend, by the means of your valuable periodical, a system of cure by which, during a long veterinary practice, both in France and in Philadelphia, New York and Harrisburg, I have been successful in most cases; while by the common way of proceeding *no animal is saved*, some either not having been attacked by that disease, or getting cured by nature itself.

This disease is also called the "red water," or blood in the back or loins, and arises principally from the cattle being at grass during the summer on lots which are very dry and without shade, and from their being exposed to excessive heat of the sun, and to great cold in winter time; there are various other causes, as moory pastures, moist weather, &c., to all which cattle in this country are generally exposed; sour and mouldy hay, the exclusive feeding on corn-stalks, also contribute a good deal to this disorder.

As this disease is of an inflammatory character, the application of spirits of turpentine and the like, which produce inflammation, is entirely wrong. This is shown by the strong throbbing of the heart, the mixture of the urine with blood; if you stir with the fore-finger in the nostrils of the animal, a good deal of blood will be discharged from them, and if you insert your hand into the straight-gut, you may bring out whole lumps of blood. Boring the horns is at most curing *symptoms* and not the *disease*; the farmer is unfortunately confirmed in this proceeding by the fact, that matter sometimes is discharged from the bored horns; but it is neither recommended by any experienced veterinarian, nor mentioned in any scientific work on the veterinary art. I therefore feel myself bound to recommend to every owner of cattle the following mode of cure, tried by me a good many times with success:

When an animal is observed to be suffering from this disorder, one or two quarts of blood, according to the size of the animal, are to be drawn immediately from a neck-vein; then two table-spoonfuls of the following powder are to be given three times every day, the powder being previously dissolved in a pint of lukewarm water; this is to be continued until the animal recovers.

Glauber's salts	-	-	6 ounces.
Cream of tartar	-	-	2 "
Purified saltpetre	-	-	2 "
Powdered root of althea	-	-	1½ "

It is necessary besides, to rub the animal frequently during the disease, principally on the back. But if the animal should be coative, either of the following clysters is to be given:

Take a handful of camomile flowers, two handfuls of flaxseed; boil them in two quarts of water, strain them, and add eight ounces of linseed oil and three table-spoonfuls of common salt. This clyster is to be applied by the means of a syringe.

Should these articles not be at hand, take one

quart of wheat bran, pour two quarts of boiling water on it, strain, and add eight ounces of flaxseed oil and two ounces of common salt. This clyster is to be lukewarm when applied to the rectum, or straight-gut, by the means of a syringe or a fit funnel.

N. B. The above cure is described in a small work, published by me last year, in the English and German languages, entitled, "A short General Adviser in the most common Diseases of Horses and Cattle, &c."—which may be obtained at the corner of Callowhill and Second streets, Philadelphia, price 50 cts.

JOSEPH FIEHNER,  
Veterinary Surgeon.

Harrisburg, Oct. 6, 1841.

## A DAY AT RIDGEMONT.

By Mathew Marmaduke Milburn, Assistant Secretary to the Yorkshire Agricultural Society.

From the London Farmers' Magazine.

Few things, perhaps, afford better opportunities for the agriculturist to improve his knowledge of the practice of his employment, than visiting and inspecting the systems of cultivation, improvements, and practices of other farmers, in different districts of the country. And I know of no recreation which so relieves the application required in the close supervision of the cultivation of a farm, as a visit to a scientifically managed estate, whether we agree with, or dissent from, the plans of the cultivator. It was with uncommon pleasure that I had an opportunity, recently, of riding over that model of careful and excellent cultivation—the farm of William Stickney, Esq., of Ridgmont, in Holderness. To a light land farmer many things were necessarily new; and had I gone over a farm having in general, with a few exceptions, abundant crops, stock of good quality, and well ordered fences, doubtless the reflections would have been delightful; but it was not the abundant crops of waving corn—not too heavy to lodge, and still not any thing wanting—that I found to admire, but it was the manifest spirit of improvement in the direction of the whole—the perfect system, order, and uniformity which prevailed, and which reminded me, not of improvements rapidly, and extensively, and fitfully commenced—not of rash experiments made without judgment, which clearly must fail—not of absurd theoretical views attempted to be forced into practice—but an extensive view of what is excellent in cultivation, carefully adopted, and carried out in its details with all the regularity and care of well ordered machinery.

It is not my intention to give a report of Mr. Stickney's general mode of culture, which would be quite out of place, after the lucid and interesting report of the cultivation of this farm, published by Charles Howard, esq., but simply to commit to paper, for the benefit of your agricultural readers, what I saw going on in June last, the period of my visit. The road to Ridgmont is somewhat winding, and passes through a considerable portion of the farm: the sides of the carriage road, carefully mown, clearly indicated that while nothing was wasted that could supply food

to the animals, it was carefully conveyed away for the purpose of soiling, that the manure made from it might be collected and usefully applied, instead of evaporating and wasting, so unsightly by the sides of the road. To the left were some large fields of oats, late indeed, but beautifully drilled, and having the most luxuriant and thriving appearance, (and every farmer knows that very late sown oats cannot look too luxuriant.) Two men were employed in pushing a hoe before them between the drills, to destroy every weed, and open a new surface of soil to the atmospheric influence, to imbibe oxygen and carbon from the air. I have long been of opinion that the great frequency of fallows on strong land, generally adopted, was not altogether necessary; and the practice at Ridgemont most triumphantly proves it, for four, five, and six years intervene in the rotations between the fallows. But soon a fallow field I did see, and in such condition. Advantage had evidently been taken of the preceding fine season, for its working was, so far as root weeds were concerned, completed; and I urged that it was fit to sow with rape, and thus get a green crop in the fallow year of the rotation.

The next object was a field of beans in flower, not indeed very tall and growing, but beautifully clean and beautifully level—the best criterion I know of, of a useful crop and good management: to this, however, there was one exception. Mr. Stickney pointed to one round portion of the field, perhaps sixty yards in diameter, where the beans were several inches taller than any other part of the field. Of this I should have been disposed to take but little notice under ordinary circumstances, imagining that it had been the site of an ash heap or mixen in some previous year; but I was astonished when I was informed that it manifested this superiority every year, and had done so for centuries, or at least so long as any memory or legend could go. It is invariably managed like the rest of the field, and no matter what crop is grown, whether wheat, beans, oats, or rape, it always exhibits the same superiority, and for the same circumference; and it did the same when it was in grass, in the time of the present occupier's ancestors, whether mown or depastured. The soil and subsoil, to a considerable depth, has been examined with some care—rather superficially I apprehend—and no perceptible difference exists from the remainder of the field. The idea suggested itself to me, that possibly it might be the site of a Roman encampment, and that, at a considerable depth, a large quantity of bones might be interred, which, by giving off ammonia in the process of their decomposition, gave this decided superiority to the crops growing in the place. This is, however, quite unsupported by any evidence, and is perfectly gratuitous on my part.

The fences at Ridgemont are a perfect model; all beautifully luxuriant, completely filled with thriving quicksets, and kept in the most beautiful order. Mr. Stickney commenced quick-wood planting in the ordinary way of three inches apart; he observed, however, that those planted the thinnest were the most luxuriant, and he planted them six inches wide. Finding this answer his expectations, he ultimately planted them nine inches apart, with decided success; so much so, indeed, that the great part of the beautiful

thick fences I saw, were the result of this system. It ought to be known, however, that the quicksets were not thrust in, and no more attended to; but planted with the soil in good order, and cleaned and cultivated with as much attention as is manifested in the rest of the crops.

The great quantity of straw grown by this excellent cultivation has to be converted into manure; and no more turnips are grown on the farm than serve the ewes in the spring. This evil is met by growing a considerable quantity of green crops in summer, especially tares, and soiling; by this means a very large quantity of excellent manure is made, and summer-made manure is worth nearly double that made in winter, if there is an equal quantity of green food consumed in both cases. The drainage of the yard is conveyed into a tank or reservoir; and as Mr. Stickney has not found such beneficial results from the application of the liquid to the soil in his farm as to induce him to cart it away,\* he conveys it to the driest part of the straw and dung in the fold-yard. The liquid being thus constantly returned, excites fermentation in summer, but in a wet season must be superfluous, and much of the benefits of it are lost by evaporation. I differ too, most entirely—and it is only fair to name it, for it is the only "eye-sore" on the farm that I witnessed—and that was the manure was carted to the road-side instead of being conveyed into the field at once. It requires a good reason to excuse this under any circumstances; for how carefully soever it is shovelled up, there is always much wasted which ought to be applied to the field and for the crop, for which it was intended.

The stack-yard, while it exhibited evident care of the grain, and an excellent contrivance, simple yet efficient, for admitting the air to the stacks by placing them upon raised clay platforms, bisected in the middle in connexion with an air flue in the stack; yet there is nothing of that foolish, fantastical dressing of the stacks, more as if they were intended for permanent pyramids, than preserves of grain from wet for a few months.

The agricultural implements are of the useful cast—nothing whimsical, nothing ridiculous—but such as the evident wants of the district require. I saw, too, a Russian plough and harrow, certainly the rudest and worst constructed novelties I ever saw, only fit companions to the Russian loaf they were exhibiting during the elections. I advised him to exhibit them at our exhibition at Hull, which he did, to the no small wonder of the persons who noticed them.

From the appearance of the grass land, it is evident that no pains have been spared in laying it down to permanent pasture. His own introduced rye-grass forms a considerable part of the best grass fields, and sustains the character, both there and elsewhere, which it had in 1817, and which obtained for its introducer the medal of the Society of Arts. There was, too, in one of the most beautifully cultivated gardens I ever saw, a specimen of his giant clover. (*Melilot Mazima*.) At the time I saw it, it was at least six and a half feet high, and a stem of it which remained of the previous year's growth was more than double that height;

\* I have found the most beneficial effects from its application to light soils.

of course it would not be allowed to grow so high in ordinary cultivation, but its rapid growth (several inches in twenty-four hours) renders it very valuable, if it succeeds in our climate, of which, from the specimen I saw, I have no doubt whatever.

It is time my lengthy paper came to a close. If any one were to ask me where he could see excellent practical, strong land farming, I would say—Go to Ridgmont.

*Thornfield, Thirsk.*

#### ON PEAT.

*From the London Farmer's Magazine.*

Peat of moss is one of the most recent deposits of the alluvial formation, of the origin of which various opinions are entertained. Six kinds have been enumerated. Some reckon it a primitive formation, and of antediluvian origin; others think it a growing vegetable, which by its decay causes the increase of the substance, and may ultimately cover the earth; and the more general opinion ascribes it to the collection and decomposition of ligneous and aquatic vegetables brought together by the destruction of forests by wars, by the axe, and by tempests, and accumulated by the decay of those bodies, and of the plants, encouraged by their decomposition. Formations of peat chiefly abound in moderately cold latitudes; they cover vast tracts of country in Scotland and in Ireland, and are found in the different states of solid peat, cut and dried for fuel, and of a black or brown color, extending to depths of four to twenty feet; in boggy or flow moss, which is supplied with too much water, and prevents the consolidation; and in many varieties of peat earths of shallow depths, forming soils of that name, sometimes cultivated and oftener unimproved—sometimes clad with a scanty covering of heaths and coarse vegetation, and often naked and uncovered with any growing plant. The theory of the formation of peat by the decomposition of the collection in hollow places of trees and leaves, of vegetation, by the action of air and water, and of the subsequent growth, has been generally received as the most plausible; but we find mosses of great extent on the tops of mountains, and on high grounds, and even on declivities, where no water can stand, and where no collections could be formed. Traces of great size have been found in mosses, and also shrubs of various kinds, and the leaves and fruits are not unfrequently met with in different stages of decay. The mosses that are cropped as land are not adapted for fuel, the composition is too friable and earthy, and the circumstance of the top of many mosses being of a different color, and spongy and fibrous, favors the opinion that the decomposition of the vegetable covering adds to the bulk of the moss, as it appears to be in a more recent state of decay than the bottom parts, which have become a black, pulpy substance, from which all traces of fibrous organization have completely disappeared. Formations of peat are found in vast beds from four to twelve feet deep on level grounds, and on declivities where no water stagnates, and where trees and vegetable matters sufficient to form the moss can hardly be supposed to

have grown, and where no remains are ever found. Mosses generally rest on clays and marls, and very often on gravels and clayey gravels with white sand; and the theorists are driven to the supposition that there exists a predisposing cause towards the formation of that substance in the woods on which the moss commenced growing, and in the climate, and in the subjacent formation, and also in the production of the plants that are adapted by the decay of their constituent parts to afford the peaty substances. But all the reasons yet given, the conjectures, theories, and suppositions, are unable to account for the great variety of the formations of moss, a solid mass, black and pulpy from top to bottom, is often found adjoining a formation of spongy fibrous materials, alike at the top and on the substratum of clay, and both existing under no apparent difference of circumstances; the former bare and uncovered, and incapable of supporting weight; the latter matted over with a thick growth of vegetables, supporting heavy weights, and affording a pasturage to animals. The varieties are numerous; some afford fuel wholly, others are cultivated, while many are unfit for either purpose, and descend by many gradations to a shallow stratum of a few inches in depth, and are called turfy, moorish, and peaty soils. The antiseptic quality of peat is well known, and preserves substances from decay; unlike fens and marshes, the air is healthy and salubrious, which shows that the moss is not in a state of putrefaction. Moss grows and enlarges upwards after being dug and carried away, supposed by the plants dissolving by the maceration and decay of their parts, and not by any process analogous to putrefaction, for they remain without undergoing the usual chemical change. The sterility of moss is ascribed to the want of the putrid fermentation, for it is inflammable and phosphorescent, qualities wholly removed from bodies that have undergone the process of ultimate decay. Moss and vegetable mould are reckoned homogeneous substances, altered by the different circumstances in which they are placed, and the external agencies to which they are exposed; but this fact, when granted, gives no reason for moss and mould being produced in adjoining situations, where little or no difference in external circumstances would be supposed to exist. No living animals exist in moss; to form it, dampness and astringency are required, and the water must be antiseptic, which is said or thought to derive that quality from the subsoil. But we are equally in the dark whether the astringent and antiseptic quality be derived from the subsoil, the climate, or from the plants that grow on the place of formation, or from the combined influence of all these causes joined together; the scientific reasonings of theorists are generally overturned by facts, and by the appearances of nature; and after all the opinions and conjectures that have been put forth, the more reasonable and natural conclusion would seem to be, that moss is an original formation, augmented, like other formations of a similar nature, by physical agencies still going on, and that it has been produced and located by causes, for a solution of which our wandering imaginations may ever search in vain.

J. D.

## DR. BOUCHERIE'S PROCESS.

The following article from a French writer "on the preservation, &c., of wood," was translated for the Savannah Republican :

Since the Academy of Sciences and the Chamber of Deputies approved and recommended to public attention the ingenious process, discovered by Dr. Boucherie, of Bordeaux, for the preservation, elasticity, hardness, and coloration of various kinds of wood, the learned and commercial world await with impatience the result of the experiments which are going to be instituted on a large scale.

The learned doctor has received from government a mission to experiment on the fine forests of the south of France, and every facility has been afforded to him for the successful application of his discovery. The process employed by him is very simple, and he has made no secret of it. It consists in using together vital force and pressure, in order to propel into the whole texture of the largest bodies of a vegetable nature certain liquids, conveniently prepared. These liquids, insinuating themselves quickly through the whole organization of the fibre, from the trunk to the most delicate fibres of the leaves, drive before them the aqueous parts of the sap, which either evaporate or flow down, whilst the salts that they hold in solution, combining with the mucilaginous or solid particles, destroy for ever, if they are of an antiseptic nature, all tendency to fermentation, and consequently to decomposition.

Numerous experiments have shown to Dr. Boucherie that deliquescent salts and the primitive waters of salt pits communicate to wood a very great flexibility ; and this is such that a wooden ruler, although exposed for many months to the changes of the atmosphere, preserves its elasticity, without undergoing any sensible alteration. He has also found that pyrolignite of iron hardens a thin plank, so as to render it impenetrable to a musket ball, and at the same time that it saves it from decay ; and that fluids imparting color and smell can communicate to wood their valuable properties, so that they make it fit for the heaviest works, as well as for the construction of the richest and most delicate furniture.

But of all the public departments, the one which is likely to derive the greatest advantages from the beautiful discovery of Dr. Boucherie is no doubt the navy. Every one knows with what rapidity the body and the masts of ships of war are destroyed. By means of the new-process the durability of ships can be prolonged, if not indefinitely, at least in a very high proportion ; and also the wood used for railroads becoming incorruptible, much expense may be saved, and great benefits obtained.

Moreover, a new fact seems to show that it might be possible henceforth to dispense with the very heavy expense of coppering ships. Timber prepared by Dr. Boucherie, and placed in constant contact with sea water, during a long voyage from Bordeaux to Bourdon, has been preserved from all kinds of alteration.

The results of the experiments now in progress will soon be known ; and, indeed, we cannot doubt of the success when we consider those already obtained and attested by the report of the learned Dumas, in the name of a commission

composed of Messrs. Mirbel, Arago, Poncelet, Audouin, Gambey, and Boussingault, members of the Academy of Sciences. The authority attached to such names is too great for requiring any commentary on our part. We shall merely extract from that remarkable report the following passage :

"The aim of Dr. Boucherie is to render wood much more lasting, to preserve its elasticity, to protect it against those variations of volume, resulting from the influence of wet and dry weather ; to diminish its combustibility, increase its tenacity and hardness ; and, lastly, to impart to it colors, and even odors, various and lasting.

"To affirm that all these conditions have been fulfilled, by means of common and cheap substances, is to fix the serious attention of the Academy on the very important subject which we have just examined."

## ON CIDER MAKING.

From the London Farmers' Magazine.

Dumbleton, August 23rd, 1841.

My dear sir,—In conformity to the request of the Winchcomb Farmers' Club you kindly transmitted to me, I give you the process of making my best cider and perry, and in as few words as I am able to convey it.

The apples being ripe and laid in a heap a fortnight, exposed to the weather, uncovered, about eighteen inches deep, they are then ground in the cider-mill, which consists of a circular stone in form of a solid broad wheel, about 4½ feet in diameter, 14 inches wide, and weighs about 18 cwt. : is supported on its edge, and drawn by a horse in a circular trough of stone, about 8 feet 9 inches in diameter, and about the depth of 12 inches, including the wooden rim upon it, which is three inches, and much like a bark-mill. In this trough near two bushels of apples are ground at a time, with a handful of charcoal strowed amongst them, until the kernels and rinds are broken small, *as much of the strength of the cider depends upon it*. This fact was proved in the Agricultural Report of the Rev. John Duncomb, in 1813, by an experiment made by Dr. Symonds, of Hereford. "He made one hoghead entirely from the rinds and cores of apples, and another from the pulp of the same fruit. The former was of the most unusual strength, and high-flavored ; the latter was watery, and possessed not one recommendation."

A horse with a man and boy will grind sufficient pommage to make two hogheads of cider in a day, which is left in open tubs twenty-four hours. It is then pressed between several haircloths by a strong screw-press, and the cider is taken to the fining house, and put into a hoghead or longer vessel. In a few days it will ferment, and throw up the must. When that appears, it is drawn off into tubs, and about one pound of pulverized charcoal is stirred in it, and is left for some hours, or until the next day, when it is put into the dropping bags to fine and to stop the fermentation ; and with one dozen made with thin calico of six-pence the yard, suspended from frames, the cider is passed through, *being previously dredged inside with pulverized charcoal*. These dropping bags

are in the form of ordinary jelly bags, and their hoops are fourteen inches in the clear. For a short time the cider will run muddy through the bags—by continuing to fill them it will soon become clear. The muddy cider in the tube is then removed.

From one to two hogshheads a day will fine by the process, but some fruit fines much quicker than other: *the apples should not be too mellow*; and pears when quite ripe should be ground as soon as collected. Apples with yellow pulps, and red and yellow make the best cider—green apples the worst. The cider you call “delicious” was made with pears, Blenheim oranges, and bromleys, mixed in equal quantities.

The dropping bags must be replaced by clean ones the next morning to filter the cider left.

The cider being now fine, with the full flavor of the fruit, it is put into a cask in a cool cellar with the bung off. Within a few days another fermentation will commence, and the cider will have a pearly whiteness, being the commencement of the acetous fermentation. As soon as perceived, it must be run through the charcoal bags as before, but it will pass through four of them quite clear in less time than it previously ran through the twelve. It is then put into the cask, and left with the bung off until March, but should any fermentation be afterwards perceived, it must be drawn off to stop it, and returned to the same cask or another.

In making the common cider, it is carried to the cellar direct from the cider mill, and is left to its natural fermentations until December, when it is bunged close. But if any part of the heat be wished to be preserved for the use of the family, it can be filtered in the cellar after throwing out the must.

Every vessel used must be quite clean, and free from the acids of bad cider or other liquors in the wood, or the whole will be spoiled.

The first fermentation is the vinous, the second the acetous, and the last the putrefactive: the use of the charcoal dropping bags is to fine the cider and stop the fermentation at the vinous process, and which it does effectually; and in the same manner all wines can be fined and the fermentation stopped whenever required, and the flavor of the fruit preserved. But these charcoal dropping bags are also valuable to cleanse impure water at sea, impure river water which supplies large towns, and soft water for washing, by removing the soot and dirt from it. That they have been only partially used since the years of their discovery, notwithstanding the cost of each bag does not exceed sevenpence, can arise, I fancy, only from the common practice of rejecting every thing that is new for a while, however good and useful for general comforts, until good sense triumphs over the prejudices of vanity.

Ever, my dear sir, yours sincerely,

JAMES RICHARDS.

To Edward Holland, Esq.,  
Chairman of the Winchcomb Farmer's Club.

#### HISTORY OF THE WEATHER.

From the Journal of Commerce.

With an old work published by Pilgram, at

Vienna, in 1788, combined with the observations made by Professor Plaff of Keil, Offeffor, of Germany, has compiled a work, entitled *The History of Climates and Changes*. For the gratification, as well as information of the reader of the journal, I quote various extracts made by Taylor, in a work published by him in London in 1880.

“It is very difficult to ascertain the precise condition of the weather in distant ages. The thermometer was not invented until 1590, by the celebrated Sanctoria; nor was that valuable instrument reduced to a correct standard till 1724, by the skill of Fahrenheit. We have long observations of temperature which go farther back than a century. Prior to that period we must glean our information from the loose and scanty notices which are scattered through the old chronicles, relative to the state of the harvest, the quality of the vintage, or the endurance of the frost and snow in winter. Great allowance, however, should be made for the spirit of exaggeration, and the love of the marvellous, which infect all those rude historical monuments.

In A. D. 401, the Black sea was entirely frozen over.

In 462, the Danube was frozen so that Theodemar marched over the ice to avenge his brother's death in Swabia.

In 545, the cold was so severe in winter that the birds allowed themselves to be caught by the hand.

In 763, not only the Black sea, but the Straits of the Dardanelles was frozen over. The snow in some places rose fifty feet high, and the ice was so heaped in the cities as to push down the walls.

In 800 the winter was intensely cold.

In 822, the great rivers of Europe, such as the Danube, the Elbe, and the Seine, were so hard frozen as to bear heavy wagons for a month.

In 860, the Adriatic was frozen.

In 874, the winter was very long and severe. The snow continued to fall from the beginning of November to the end of March, and encumbered the ground so much that the forests were inaccessible for the supply of fuel.

In 891, and again in 893, the vines were killed by the frost, and the cattle perished in their stalls.

In 991, the winter lasted very long with extreme severity. Every thing was frozen, the crops totally failed, and famine and pestilence closed the year.

In 1044, great quantities of snow lay on the ground; the vines and fruit trees were destroyed and famine ensued.

In 1067, the cold was so intense that most of the travellers in Germany were frozen to death on the road.

In 1124, the winter was uncommonly severe, and the snow lay very long.

In 1133, it was very cold in Italy; the Po was frozen from Cremona to the sea; the heaps of snow rendered the roads impassable; the wine casks burst in the cellars, and even trees split by the action of the frost with immense noise.

In 1179, the snow was 8 feet deep in Austria, and lay till Easter. The crops and vintage failed, and a great murrain consumed the cattle.

The winters of 1209 and 1210 were both of them very severe, inasmuch that the cattle died for want of fodder.



In 1216, the Po froze 15 ells deep, and wine burst the casks.

In 1234, the Po was again frozen, and loaded wagons crossed the Adriatic to Venice. A pine forest was killed by the frost at Ravenna.

In 1236, the Danube was frozen, and remained long in that state.

In 1261, the frost was intense in Scotland, and the ground bound up. The Categut was frozen between Norway and Jutland.

In 1281, such quantities of snow fell in Austria as to bury the very houses.

In 1292 the Rhine was frozen over at Breysach, and bore loaded wagons. One sheet of ice extended between Norway and Jutland, so that travellers passed with ease; and in Germany, 600 persons were employed to clear away the snow, for the advance of the Austrian army.

In 1305 the rivers of Germany were frozen, and much distress was occasioned by the scarcity of provisions and forage.

In 1316 the crops wholly failed in Germany. Wheat, which some years before sold at *six pence* a quarter now rose to two pounds.

In 1323 the winter was so severe, that both horse and foot passengers travelled over the ice from Denmark to Lubec and Dantzic.

In 1339 the crops failed in Scotland, and such a famine ensued, that the poorer sort of people were reduced to feed on grass, and many of them perished miserably in the fields. Yet at this time wheat was so low in England as *three shillings and fourpence a quarter*.

In 1344 it was clear frost from November, to March, and all the rivers of Italy were frozen over.

In 1392 the vineyards and orchards were destroyed by frost, and the trees split to pieces.

The year 1408 had one of the coldest winters ever remembered. Not only the Danube was frozen over, but the sea between Gothland and Zealand, and between Norway and Denmark; so that the wolves, driven from their forests, came over the ice into Jutland. In France the vineyards and orchards were destroyed.

In 1423 both the North sea and the Baltic were frozen. Travellers passed from Lubec to Dantzic. In France the frost penetrated into the very cellars. Corn and wine failed and men and cattle perished for want of food.

The successive winters of 1432, 1433 and 1434 were uncommonly severe. It snowed *forty days* without interruption. All the rivers of Germany were frozen and the very birds took shelter in the town. The price of wheat rose in England to *twenty-seven shillings a quarter*, but was reduced to *five shillings* the following year.

In 1460 the Baltic was frozen and both horse and foot crossed over the ice from Denmark to Sweden. The Danube continued frozen two months, and the river yards in Germany were destroyed.

In 1468, the winter was so severe in Flanders, that the wine distributed to the soldiers was cut in pieces with hatchets.

In 1544 the same thing happened again—the wine being frozen into solid lumps.

In 1548 the winter was very cold and protracted. Between Denmark and Bostock, sledges drawn by oxen or horses, travelled on ice.

In 1564, and again in 1568, the winter was ex-

tremely severe all over Europe. The Scheldt froze so hard as to support loaded wagons for three months.

In 1571, the winter was severe and protracted. All the rivers in France were covered with hard and solid ice, and fruit trees, even in Languedoc were killed by the frost.

In 1594, the winter was so severe that the Rhine and Scheldt were frozen and even the sea at Venice.

The year 1608 was uncommonly cold, and snow lay of immense depth even at Padua. Wheat rose in the Windsor market from thirty six shillings, to fifty six shillings a quarter.

In my next article I will conclude the account of cold and frost, and commence that of heat and drought, and will then make some general observations as to the effect of frost, heat and moisture upon the earth's crusts or strata. E. M.

#### TO THE SUBSCRIBERS TO THE FARMERS' REGISTER.

One more monthly number will complete the current (9th) volume of the Farmers' Register, immediately after which will be commenced our labors, expenditures, and performance of obligation to subscribers, for the next succeeding volume and year. The "Conditions of publication" for the ensuing volume will be inserted in this number; and we respectfully and earnestly request of every subscriber, whether old or new, punctual or delinquent in paying his dues, to read and mark the conditions, and the offers of different premiums thereto annexed.

It need not be said that we desire the continued favorable regard and support of those who have heretofore given their subscriptions to this publication, and who approve its course and its effects. All such will give an additional and important value to their continued subscriptions by sending early payments, thereby making themselves entitled to one or other of the different premiums offered for advanced or early payments. And though many such subscribers, as heretofore, may be content to forego the extra premium copy, and yet pay as if they had taken it, still we prefer that every one shall make use of this privilege who may have a right to require it. The extra copies are not sent without being ordered; because, if not wanted, by sending even a single number, a volume is destroyed, without benefit to any one.

Those subscribers who design or wish to discontinue receiving the Farmers' Register, are as earnestly requested to give the proper notice (according to the conditions,) as early as possible after this publication; and by no means to wait, as so many do, until our expenditure for their supply of the next volume has been fully incur-

red, or, still worse, until the limit of time for discontinuance has elapsed.

THE REMEDY OF EACH INDIVIDUAL AGAINST  
NON-PAYING BANKS.\*

From the Bank Reformer.

Having perused your first number, and considering your object to be one of general interest, and highly praiseworthy, the writer readily contributes the result of his observation and experience for its promotion.

A continued suspension of the banks is an abuse only tolerated by a depraved public opinion. The circulation of the notes of suspended banks, as money, is an absurdity. It introduces a currency of fluctuating and indefinite value, or of no value at all, destructive of all credit, and highly demoralizing to the community which tolerates it. In fact its evils are universally admitted in theory. The great mistake is in so readily submitting to them in practice. The great error is in reference to the remedy. Every individual is made to believe that he alone can do nothing, that he has no alternative but submission, until the public provide the remedy.

Now the fact is directly the contrary. Every individual has the remedy in his own hands. That remedy is the refusal to receive broken promises in exchange for property, or in payment of contracts. This every man can do. And in the latter case eventual payment, in the legal currency of gold and silver, is secured to him by the constitution of the United States. It is true individuals are unwilling to defend their rights by law against a powerful public opinion, however false and mistaken that opinion may be. But in a case like the present, when a great public evil is the result of such acquiescence, it becomes an act of patriotism, an absolute duty, to enforce the laws against the abuses of the banks. This remedy, or I am much mistaken, still exists against the banks of Virginia. The legislature has most improperly relieved the banks from the penalties of suspension, but has no power, to secure them against eventual payment of their notes with interest. Let a number of patriotic individuals unite in the measure of bringing suits on every bank note, or in whatever way will make the suits most expensive in costs to the banks, and you will very soon see the resumption of every solvent bank. They will either pay or break. This is not mere speculation. The experiment has been tried in New England, with

perfect success. In 1808, the country banks in New England had adopted various expedients to evade or delay the payment of their notes, in consequence of which they became depreciated to the extent of three or four per cent., and this very depreciation gave to them the entire circulation for common purposes, even in the city of Boston. Each bank justified itself as now by the practice of others. A number of individuals, viewing the matter in its true light as an abuse in banking which ought not to be tolerated, from the best motives united in the measure of bringing separate suits on every note presented for payment, relying on the coercion arising from multiplying the costs. As the laws of Massachusetts imposed no penalty at that time beyond the legal interest of six per cent. per annum, some reams of blank writs were prepared and notice given to the banks of the determination to resist their abuses. The success was complete. The first bank on which the experiment was tried gave up the contest after a few days' resistance. The others cried for quarter. The reformation was immediate and complete; but soon revealed the actual insolvency of many banks, which had found it easy to sustain their credit under the former system of non-payment. Experience has fully shown that there is no remedy for bank abuses like the coercion of the law. We recommend this specific to the patriotic Association of Petersburg. A bank which will not pay its notes after a suspension of four years, should be treated as the established enemy of sound credit and honest dealing, and driven from the community. The common error put forward in the school of Mr. Biddle, and widely circulated by the needy friends of a depreciated currency, is that one portion or community of the United States cannot maintain a sound currency whilst a neighboring community tolerates a depreciated one—that there can be no resumption unless it be general. Thus, the legislature of Virginia is made to believe that the banks of that state cannot resume specie payments, whilst Baltimore is in a state of suspension. So Maryland must wait for both Virginia and Pennsylvania; and as all can never agree upon the time, there will never be resumption. Now this idea is wholly false, the veriest of errors. Specie is wholly out of use in a community where a depreciated currency is generally adopted. It commands a premium for the purpose of being transmitted abroad or where it is properly appreciated. Its tendency is to leave the community where the banks are suspended, to go to that where the banks pay specie. The result is as uniformly true in practice as the theory is sound and reasonable.

\* Were we permitted to give the name of the author, it would command respect and attention for this communication, even if its merit were not of itself conspicuous. We may however say thus far, that it is the production of one who is friendly to the banking system properly conducted, and to a currency principally of bank paper—and who, moreover, has learned by long practical acquaintance as much of banking and commercial business, as he has by study and reasoning of the theoretical truths and principles of political economy. We are proud of such a contribution to the Bank Reformer; and shall be gratified hereafter to present through its pages the views of so well-informed a bank-man, even should they come in conflict with our own opinions.—ED. B. R.

Boston, and the country of which it is the commercial centre, found no difficulty in maintaining specie payments in 1815 and 1816. When the banks of every other portion of the United States suspended, the banks of New England were never more at ease. So, since April 1838, Boston and New York have maintained the integrity of a sound currency, without the slightest difficulty. When Philadelphia suspended, did her doing so make specie payments more difficult to maintain in New York? On the contrary, after the panic arising from a false public opinion was over, it was found that the current of specie was wholly from Philadelphia, where it had ceased to be in

demand, toward New York, where its value was appreciated in the currency. So in fact the banks of Virginia have nothing to fear, by resuming, whilst Baltimore remains suspended. The notes of the Virginia banks will at once bear a premium in Baltimore, for use in Virginia, equal to the depreciation of the Baltimore currency. But the banks of Baltimore will not be the purchasers, since by doing so, they are losers of the sum which they have to pay as premium. The town of Petersburg can maintain a sound currency if it will. Without the slightest difficulty, every individual may decide, that he will recognize no currency by receiving or paying it, but at its specie value—there lies the true remedy. **EXPERIENCE.**

Boston, October 15.

#### ROOT CULTURE IN FRANCE.

For the Farmers' Register.

*Mr. Editor,*—I send you an article on the culture of potatoes, turnips, carrots, and beets in France, translated from 'Le Bon Jardinier.'

*Pomme de terre, or Parmentiere, Solanum tuberosum—Irish potato.*—This valuable plant fortunately needs no recommendation in France; its merits are fully appreciated there, and if some parts of the kingdom are still behind-hand in the cultivation of it, that will not long be the case. Care for the future should be directed to the amelioration of which its culture is susceptible, care as to the different operations which it requires, care in the choice of varieties in relation to the difference of soils and climates. Want of space prevents my entering into details sufficiently for any of these objects; I shall therefore confine myself to a few detached remarks. The methods of cultivating the potato are various, and one can name none of them that are not advantageous when the work has been done with attention and assiduity. Whatever method one follows he should never forget that the oftener and better he works his potatoes the greater and larger will be their product. There is yet a difference of opinion as to the best method of manuring for them, but the prevailing custom seems to be to throw the compost into the furrows, and to place the potatoes immediately on it. In hard clay lands, where generally the quality of the potatoes is bad, one will find it better to use, instead of the compost, coarse litter, or even new straw, or the leaves of any dry plants which serve to raise and lighten the ground. We will give here an idea of the Irish method of cultivating the potato, which differs widely from ours, and which they say is more productive, and which has in addition the advantage of bringing good potatoes in land naturally too wet for this plant. They divide the land into beds more or less wide, but say five feet divided by an interval of two feet. This interval should not be planted, and will serve to furnish earth to lay on that which is planted. They work lightly with a hoe or spade the surface of the beds. They then spread the manure, on the surface of which they place the potatoes at regular distances of from nine to ten inches every way. They then cover them with from two to three inches of dirt taken from the aforementioned unplanted intervals. When the plants are some

inches high they place about them another layer of earth, taken from the same places; this operation is to be repeated rather later a third time. It is unnecessary to say that the earth from the intervals should be well pulverized before it is spread on the beds.

As the question of giving preference to large tubercles or to small ones, to quarters or to eyes, cannot be discussed here, I will only permit myself to say that, from some comparative experiments, it seems that with an equal number and on equal ground the large tubercles will give the most considerable net product, and that the small tubercles or the bits of potato produce a greater quantity in proportion to the quantity of seed that is planted. Therefore one should prefer either the one mode or other as he finds it to his interest to manage to advantage his land or his seed. The eyes detached with a little of the pulp have been very much recommended. This is a supplementary means, very useful in years of scarcity, but in ordinary cases is not as desirable either as the whole tubercles or as the quarters. The germs already put out, detached from the tubercle which bears them, and planted, give very good results. To obtain them at the latest period it is well to plant some time in June slips taken from stalks that are sufficiently firm and developed. This mode is advantageous for replanting where they have failed to come up, and appears susceptible of very important applications, and deserves to be studied with attention and interest. The seed from the berry is another valuable mode of reproduction, which it is desirable that every one should know, that they may make use of it in case of need. It will give, in the first year, if the land is light and suitable, produce of good size. It is executed, in two manners, first by sowing them in a nursery in the garden, to replant at from fifteen to eighteen inches between each plant, or by sowing them in the following manner, viz: The earth being properly prepared, they make slight trenches at the distance of from eighteen inches to two feet apart. In March or April they sow it very thinly in these trenches, and cover it very lightly with earth well pulverized. When the young plants can be easily distinguished pull up the weeds with the hand; then when they are some inches high work them anew and thin them in the places where they are too thick, and with a hoe place some earth about the plants which remain, to strengthen them. Rather later a second thinning is necessary, which leaves the plants about one foot apart, this time they should be moderately hilled up. They then continue to hill them as they do planted potatoes. In an experimental sowing of an entire field, executed for the Society of Agriculture by M. Sageret and myself, we obtained in this manner potatoes of which the largest moiety were of the ordinary size and the rest were as large as nuts. But the principal and almost only design in sowing them is to obtain new varieties. Many varieties of potatoes differ very widely, some are very early and some very late; some are distinguished for their great yield, others for their excellent quality; some have but few stalks and leaves, giving free access to the rays of the sun, and in some species the leaves form a thick cover that effectually wards off the sun. These differences should have great influence on the choice of the kind to be cultivated

in different circumstances and soils. Thus the leafless varieties will be of a better quality, and will ripen better in a cold and moist soil, whilst those which keep off the sun from their roots will protect themselves better in a drought on a dry and scorching soil. The varieties whose tubercles tend to raise themselves to the surface should be hilled more, and consequently planted more distant, than the other kinds; the treatment of those whose tubercles naturally grow downwards should be proportionably opposite. One sees by this that the study of the varieties is far from being indifferent, and that to obtain in quantity and quality the best possible produce, it is necessary to combine local circumstances with the habits of the variety, and to modify the culture in consequence thereof. Among the numerous varieties which exist, I shall only mention some of the most valuable. *Le cornichon jaune*, called the yellow Holland in the Parisian markets, is very light and digestible. *La truffe d'août* is a pale red, early and very good. *La Descroizille* is of a rose color, pretty long, of an excellent quality, and keeps well. *The early dwarf* is yellow, round, and remarkable for its extreme precocity. It ripens in June. *The fine early* is a variety which has been lately brought from the United States, and is almost as forward as the preceding, but more mealy and of a better quality. *La Chave*, or *Shaw*, is yellow, oblong and more forward, larger and more productive than the *truffe d'août*. It is the most valuable of the early varieties that I know. *The late Irish*, called the *American* at Neuchâtel, in Switzerland, and the *Swiss potato* at Valenciennes, is valuable because it can be kept until midsummer without sprouting. Many other varieties might be mentioned, particularly among the pale red and the large yellow. Many of these last variety have the merit of being at the same time productive and very good. The varieties of the potato are not absolute, but depend often on the climate and the soil, and it is proper that one should try many kinds before he determines which he shall cultivate. The seed can here be of great use in creating new varieties in different situations, more suited to the climate in which they are originated, than those brought from a distance.

I have received from M. Saline a wild potato, the type of all of our varieties, but its small and brown tubercles are inferior to our good species. I have mentioned this variety only on account of the interest which it offers in relation to natural history and to the history of this plant, so important in our rural economy. To the different varieties mentioned above I will here add the *Sainville*. It is a yellow, oblong potato, and was obtained from the seed by M. Sainville, a farmer of distinction, who had the kindness to communicate it to me, with many other good varieties obtained in the same manner. It is one of the best potatoes that I am conversant with, has a fine pulp, is dry, mealy, and has a fine flavor. This and the *Descroizille* are, I think, the only potatoes which can without too much exaggeration be compared to the chestnut. The first working to be given to the potatoes may be done very advantageously with a harrow, dragging it transversely on the rows some time after planting, when the shoots first begin to show themselves above the ground; they pass the harrow twice

over the rows, this is a good and economical mode of working the potato.

*Navet, turnip. Rabioule. Brásica Rapa.*—The resources which the turnip furnishes as food for cattle through the winter are generally known. From time immemorial they have used this root in France for fattening bees and to aid in the keeping of cows, sheep and hogs. Turnips like a soil rather light and dry, than stiff and moist, well prepared, clean and manured. The ordinary time for sowing them is from the first of July to the first of August, it however may in some cases be deferred as late as the first of September and in others may be much earlier. The usual mode of sowing them in France is to sow them broad-cast; that of sowing them in rows would be certainly preferable on account of the greater facility of weeding and working them, if the implements suitable for this work, such as the cultivator, the small triangular harrow, and other similar instruments, were more used among us. One can even after having sown them broad-cast trace the rows with these instruments at the first working. But, in whatever manner one sows them, it is always advantageous for the turnips, and for the crop that follows them, that they be thin and well worked. Although it is generally very advantageous to give the culture of turnips the care which I have indicated, yet I should add that they frequently get very good crops of this root with much less care, and in sowing them after a single light working given to the stubble fields the seed will thrive if the season is favorable. Although this is by no means the best mode, yet in countries where this culture is but little advanced it often renders good service to the farmers. It is particularly in the rye lands, light and sandy, that this manner of cultivating the turnip can be practised with success. All large varieties are suitable for the farmer; the one principally used is the large turnip of Limousin called the *Rabioule*. There are many varieties of the turnip. That of *Auvergne* with a red top is excellent, the *Norfolk* is still more renowned, but it is slow in coming to maturity, and for that reason does not suit for late sowing, and requires a careful culture to obtain its full development; a third, originally from Holland, and noticed in my collection as the *Turnep hâtif*, is valuable on account of the facility of its success, the rapid advancement and the great size of its roots. It is much better suited than the other varieties to be sown late and under unfavorable circumstances. The *round yellow turnip* is also a very good variety; it grows less out of the ground than the *Rabioule*, and does not acquire such great size; its pulp is close and firm, and it can stand the frost rather better. A new variety, the *yellow Scotch turnip*, has lately spread a little in Scotland and England, because it is said to be better able than all others to stand the cold. Among the long turnips one of the most beautiful and best for the farmers is the long *navet de campagne*, from Alsace, sometimes known as the *large Berlin turnip*. The turnips should be dug up and put away before the cold weather, at least all that you do not wish to have eaten where they stand, by the sheep, which is in some instances very advisable. They sow generally six pounds of seed to the hectare.\*

\* A hectare is equal to two English acres.

**Carotte. *Daucus carota*.** The excellent quality of the carrot as forage for cattle is well known, and should render its culture in the fields more general than it is. One of its advantages is that it can make shift without manure. A soil soft, deep, well pulverized, and that has been manured during the previous year, suits it best. If one sees fit to manure for them it is best to use compost. They sow them at any time during March, April and May, and sometimes even in June, according to the climate and soil, at the rate of from 8 to 10 pounds per hectare, either broadcast or in rows, which is best. They cover the seed with a light rake and a roller. Sometimes the carrot is sown with oats, barley, flax or some other spring grain, or even on the rye and wheat with a rake, the success is less certain thus than when sown alone. In the last case they thin them and work them. They cut off the leaves as they dig them up or afterwards, they then put them in a shelter to preserve them from the cold, or if the soil is dry they place them in deep trenches, or in a pit. Many kinds of carrots are cultivated for cattle. In England they prefer the red, in Flanders the pale red, with a large top, elsewhere the yellow or white. There is some difference in the varieties independent of the color, but all can be usefully employed. The *yellow of Achicourt* is justly regarded as one of the finest kinds, the *large white of Breteuil* is also a very fine and vigorous variety. Since 1825 I have had a variety which was sent me from Brussels and which seems to me very interesting to farmers; it is white with a green top, and grows considerably out of the ground, extremely large and remarkably vigorous.

**Betterave champêtre. Desette. *Beta vulgaris campestris*.**—All beets are excellent food for cattle, especially for milk cows, but they cultivate particularly for this purpose the *Betterave champêtre* on account of its great product. It requires a good soil well prepared, and that has been manured during the winter. They sow it from the last of March to first of May, often broadcast, but the culture in rows is preferable at the distance of fifteen to eighteen inches, which is necessary to work the intervals with the hoe or the cultivator. They thin, weed and work the plants without hilling them. The beet is also sown in hot beds to be replanted in the fields when the roots have attained the size of the finger. At the end of summer, when they have nearly attained their maturity, one can gather the leaves taking those which are at the bottom and always leaving a good bunch at the top. In October and November, before the frosts, they dig up the roots, and after having taken off all of the leaves and wiped off the dirt, they put them in a dry place, or in a pit or trenches, in the ground, covered with coarse straw, to defend them from the cold and dampness. They can eat these roots during the whole winter. There are many varieties of the field beet, but of which the most esteemed and the most beautiful is that which grows more than half out of the ground, and is for that reason called *Betteraves sur terre*. The *Betterave blanche pure*, generally used for making sugar, deserves also to be used as food for cattle. From the interesting experiments related in the *Annals de Roville*, by Mons. de Dombasle, it appears superior to the *Betterave champêtre* in the proportion of two to one in

point of nutritious qualities. The *blanche a collet rose*, also cultivated as a variety for sugar, is perhaps still more valuable for cattle than the pure white, because it is more vigorous and larger. I will mention as being one of those used in making comparative experiments, the *Jaune blanche*. The skin is yellow and the pulp is white. It is rich in saccharine matter and at the same time strong and vigorous. When they sow the beet in rows they use six pounds of seed, and when broadcast from eight to ten pounds per hectare.

#### AMERICAN WONDERS.

Two of the greatest natural curiosities in the world are to be found within the United States, and yet scarcely known to the best informed of our geographers and naturalists. The one is a very beautiful waterfall, in Franklin county, in the state of Georgia; the other a stupendous precipice, in Pendleton district, South Carolina. The Tuccoa fall is much higher than the falls of Niagara; the column of water is propelled beautifully over a perpendicular rock, and, when the stream is full, it passes down the steep without being broken.

The Table mountain, in Pendleton district, in South Carolina, is an awful precipice of nine hundred feet. Very few persons, who have once cast a glimpse into the almost boundless abyss, can again exercise sufficient fortitude to approach the margin of the chasm; almost every one looking over, involuntarily falls to the ground senseless, nerveless, and helpless, and would inevitably be precipitated, and dashed to atoms, were it not for the measures of caution and security that have always been deemed indispensable to a safe indulgence to the curiosity of the visitor or spectator. Every one, on proceeding to the spot whence it is usual to gaze over the wonderful deep, has in his or her imagination a limitation, graduated by a reference to distances with which the eye has been familiar. But in a moment, eternity, as it were, is presented to the astonished senses; and the observer is instantly overwhelmed. He soon recovers from the first surprise, and in wild delirium surveys a scene which, for a time, he is unable to define by description or limitation. — *Philadelphia Inquirer*.

#### TRANSPLANTING TREES.

Most nut-bearing trees may be as much improved by transplanting and grafting as fruit trees are. The hickory and the chestnut may thus be made to bear nuts far better flavored and three times as large as they produce in an uncultivated state. In a good soil they will soon come to maturity; and, for shade, fuel, or timber, the chestnut, butternut, and hickory are not inferior to the unproductive horse-chestnut, elm, and maple. Late in autumn or in spring is the time for transplanting, for which and for grafting the same course is to be pursued as with the apple or pear tree, care being taken to place the roots about the same depth in the earth that they naturally grow.

## SUMMARY OF NEWS.

Friday, Nov. 5, 1841.

A Spanish slaver, the Gabriel, from Havana, has been captured by the British cruiser Acorn, and sent into St. Helena. Seven other slavers had before been sent in, and 1600 Africans, taken in them, were then on the island. Papers found on the Gabriel stated that 23 slave vessels were fitting out at Havana.

The yellow fever has been very prevalent and fatal at Vicksburg and New Orleans. Natchez and Mobile have been very healthy through this season.

The ship Huntress arrived at New York on November 2, direct from Canton, bringing accounts 17 days later than those published in last week's summary, and which the papers by the Huntress confirm. There have been no later military operations.

The English traders in China are much dissatisfied with the terms of the ransom of Canton. They complain that the ransom will be paid out of their own money, and that the trade will fall into the hands of the Americans and other nations, to the injurious exclusion of the English. The English commander held possession of the island of Hong Kong, and had advertised many building lots for sale.

The blockade of Canton had been announced just before the Huntress sailed.

*Florida.*—The United States steamer Gen. Taylor, Capt. Gilham, arrived last evening from Florida. From a passenger we learn that Tigertail and most of his band, about 100 Indians, have been induced by Alligator to come in at Tampa—where they are safe under the care of Col. Worth. It will be recollected that Alligator is one of the Indians recently arrived in the territory from Arkansas, for the purpose of inducing his brethren to emigrate to that country.—*Savannah Republican.*

*Shipment of two hundred and fifty Indians, including Coacoochee and his entire band!*—We have information from Tampa Bay to the 14th inst. which may be relied on, stating that Colonel Worth had shipped 250 Indians to the West, including Coacoochee and his entire band, *Hospitalkee* and 85 of his band, and a considerable portion of *Halleck's* people; and that arrangements are in progress for extensive and energetic winter operations, to follow up the active summer campaign with which our present indefatigable commanding officer has "astonished the natives."—*St. Augustine News.*

In the case of the United States against the Bank of the United States, in the Circuit Court of the United States sitting at Philadelphia, in a suit to recover the sum of \$251,243 24, retained by the bank out of the declared dividends upon stock owned by the United States, as an offset for commissions, losses, &c. in the negotiation of a draft of the Government upon France some years ago, the jury on Monday morning gave a verdict in favor of the United States for the amount claimed and costs.—*Nat. Int.*

In the important suit of the United States Bank against Steenbergen and his alleged endorser, (Col. Andrew Beirne), judgment has been given for the defendants. The sum in suit was very large.

The packet ship Oneida sailed from New York on November 2d. for France, carrying away \$151,830 in specie.

Benjamin Green, the famous Richmond financier, is now under trial.

Friday, Nov. 12, 1841.

Gen. Wingfield Scott has announced to the public, (through a *quasi private*, but *lithographed* circular letter,) together with an exposition of his political

opinions and principles, his ready consent to accept the office of president of the United States. This annunciation purports to have been called forth by many private letters, none of which are given. It is now in all the newspapers. If indeed Major General Scott's ability to fill the exalted station were at all comparable to his ardor in seeking the promotion, it would be a dangerous and awful conjuncture, when the actual and acting commander in chief of the armies of the United States, is also in the field as an avowed, bold, and busy candidate for the presidency. But, as General Scott is, this remarkable and singular movement is rather an illustration of the old fable of the ass kicking at the dying lion. If the opinions of Gen. Scott are indeed worth any thing, (which we do not mean to assert,) this movement would clearly indicate the belief, that the lion Clay is politically dying—and that his claims to the succession no longer require respect or forbearance from the smaller aspirants of his own party.

"One of the greatest frauds practised upon the community by banking institutions, is the declaration of dividends by those that are suspended. The following dividends have been declared by the Philadelphia banks:—

	Capital.	Rates.	Am't.
Southwark	250,000	3 per ct.	7,500
Commercial,	1,000,000	8 "	80,000
Manuf. & Mechan.	401,300	2½ "	10,032
Western,	500,000	3 "	15,000
Northern Liberties,	350,000	2½ "	9,250
Moyamensing,	250,000	2½ "	6,250
Mechanics',	1,400,000	2½ "	35,000
Farm. and Mechan.	1,250,000	2½ "	31,250
Girard,	5,000,000	1 "	50,000
	\$10,401,300		\$194,282

The currency issued by these banks is at 4 per cent. discount for specie, owing to their confessed inability to pay their debts, yet in the face of this declaration, they come out and announce that they have made profit of an average of nearly 2 per cent. in six months, which they divide among their stockholders. Now, one of two things is certain. If the banks are making money, they can afford to bear the loss of converting a sufficient quantity of their assets into active means, in order to redeem their circulating notes. If they are not making money, and cannot pay their debts, this process of dividing up the capital among the stockholders is a direct robbery of the creditors of the bank. An association of individuals subscribe, as in the case of the Girard Bank, \$5,000,000; on the credit of that capital they obtain credit of the public and of other banks; in process of time, they find themselves unable to pay the debts so contracted, and their notes sell in the market at 4 per cent. discount. They then proceed to divide up among themselves, at the rate of 6 per cent. per annum, the capital, on the strength of which they obtained credit. If they can divide 6 per cent., why may not they divide the whole, and leave the creditors to take care of themselves? The above banks are all insolvent, and the Girard so notoriously bad, that the stock sells at 25, and yet the directors have the boldness to take \$50,000 of the money that belongs to the creditors of the bank, and divide it among the proprietors. The profligacy of this proceeding can only be equalled by the supineness of the people that permit such a state of things, or the corruption of the legislature that permits such institutions to exist.—*N. Y. Herald Money Article.*

A British sloop of war, Iris, has attacked a large slaver, in the Bight of Benin, and was beaten off with loss.

The bank of Buffalo has finally stopped payment. Of twelve banks in Buffalo a year ago, eleven are

broken, or at least have stopped operations, and the twelfth is in bad credit.

*Lima, July 9th, 1841.*—Between the 8th and 15th ultimo, a complete transformation took place throughout Bolivia. Gen. Santa Cruz has been proclaimed president by the people and army, and a deputation has been sent to Guayaquil (where he at present resides) to invite him to return to his native country and accept the command.

A war between Equador and Peru now appears inevitable, in which it is probable that Bolivia, with Gen. Santa Cruz at her head, will take a part, and Peru will be invaded from the south and north simultaneously, when I conceive the fall of the odious Gamarra horde to be inevitable.—*Jour. Com.*

The Washington Bank of this city (one of the Free Banks) has been closed by an injunction from the Chancellor. Its circulation is small. In March last, it was \$14,025; to redeem which, there were pledged with the Comptroller New York State Fives to the amount of \$7000 and bonds and mortgages to the amount of \$10,000. It has never enjoyed a large share of the public confidence.—*Id.*

The London packet ship Philadelphia takes \$55,000 in specie, chiefly sovereigns.—*Id.*

There are indications in various quarters showing that a general movement is in contemplation to urge a resumption of specie payments by the banks. The dominant party in this state will probably think themselves bound to make a stir in the matter, and we do not think that the whigs will offer any obstruction to the course which the other may choose to pursue.—*Bull. Am. (Bankite.)*

*Oct. 14.*—Our banks.—We have previously noticed the fact, that the Mechanics' Bank, and the Bank of Augusta, were paying out their bills freely to pay for our staple. We have now the pleasure of announcing to our country friends, that all our banks have come to a similar determination, and the planters may therefore confidently calculate on receiving a specie paying currency for their crops.—*Aug. Sentinel.* [This result is entirely owing to the application of the "Macon specific," or to refusing to receive any depreciated bank notes, except at their real value. We trust the same will be applied soon in Virginia, if the legislature and the banks should maintain longer the existing fraudulent state of suspension and depreciation. In that case, "war to the knife" against the banks should be the rule of action of every foe to the fraudulent paper system.]

Gen. Santa Ana has become the master of Mexico, in the recent revolution.

It is understood that the leaders of the Houston party of Texas, now in power, are favorable to union with this country—and that the measure will be moved in the next session of the Texan congress.

J. B. Terry, the teller who robbed the Farmer's Bank at Danville, has been tried and acquitted without difficulty. We have not heard the grounds of acquittal; but as the proof was positive of his abstracting certain bank notes, we can only infer that the jury must have decided that paper promises to pay are not money—and that when these promises are notoriously broken, and not intended to be fulfilled, that they are worth nothing, and are nothing more than lies and evidences of fraud, sanctioned by the legislature of Virginia.

*A question for lawyers.* The banks of Virginia have forfeited their charters more than once by refusing to pay specie. Are any debts incurred to them as corporations, while thus unchartered, recoverable by law?

The steam ship Great Western arrived at New York on the 10th, bringing accounts from Bristol to October 23. The Britannia, which started on the 21st., also arrived at Boston on the 7th.

There has been an insurrection in Spain.

France is in a disturbed state.

There is great excitement in the money markets, both of London and Paris. The state of trade is bad. The heavy rains have injured the crops, and there will be a scarcity of wheat. There is a slight increase in the revenue. Cotton is steady.

All the English papers are talking about the probability of a war, and active preparations are making for it.—*Public Ledger.*

*Philadelphia Money.*—There has been a great change for the worse within two of three days, in the discount on Philadelphia money, and in fact in all the money of Pennsylvania and that part of New Jersey which remains suspended. The discount yesterday was 5 1-2 to 6 per cent., and the brokers were quite indisposed to buy large sums at all. Suspension seems to be coming to a crisis. The sooner the better. Pay, or wind up, ought to be the only language held towards the banks throughout the country.—*Jour. Com.*

The rate of exchange is increasing against Virginia, that is, the notes of our non-specie-paying banks are becoming still more depreciated—and that not only as to the specie currency of New York, but also as to the irredeemable paper currency of Maryland and Pennsylvania. The Virginia banks have stopped their heretofore regular practice of selling specie—that is, selling drafts on New York, which is the same thing in effect.

"The movement in Philadelphia, on the part of the strong banks in favor of resumption, will no doubt be successful, notwithstanding that dishonest prints, both in this and that city, endeavor to discourage the measure." "The Philadelphia Banks have now been suspended over two years, and exchange, that is the depreciation of their currency, is as high now as it was in November, 1839. Will the sapient Courier inform the public when, at this rate of improvement, exchange will be at par?"—*N. Y. Herald*

[This question will apply as well to the banks of Virginia as to those of Philadelphia.]

On Sunday night, about midnight, fire broke out in a stable in Petersburg and consumed the First Presbyterian Church, Powell's Hotel, and several stables and smaller buildings. About 30 horses perished. The loss about \$60,000. The remote origin of the fire supposed to be the drunkenness of a negro, and the existence of numerous low tipping shops being permitted. The certain cause of the progress of the conflagration, is the refusal of the town to supply water, which might be done for one fifth of the cost of this one fire—and for want of which easy supply the town is always in danger from fire.

The yellow fever has ceased at New Orleans. To the last accounts, it was still raging at Vicksburg.

A light-house has been constructed entirely of iron, in England, to be carried (in pieces) and set up at Moran Point, Jamaica.

The Seminole are continuing to come in and surrender in small parties, and the total cessation of the war seems to be at last at hand.

Specie to the amount of \$150,000 was shipped on the 9th inst. from New York, by the Patrick Henry, for Liverpool.

*Friday, Nov. 19, 1841.*

There is an increasing uneasiness in regard to the bills of the western banks of New York. It is supposed that many others will follow the Bank of Buffalo into liquidation.

The shocking state of affairs evinced by the report of the Girard Bank has astonished even the foes of that concern, and has much increased the anxiety in relation to the other banks, [of Philadelphia,] many of which will undoubtedly soon make assignments, no



other course seems to be left to them. Their funds are completely locked up in unavailable and constantly depreciated assets. The banks of Baltimore seem to be bound hand and foot between the wants of the state, city, and that stupendous shinplaster concern, the Baltimore and Ohio Rail-road, and the financiers of that city have been contriving a plan for some time, by which the Rail-road orders, payable only in city stock, which is at 15 per cent. discount, may be made worth par. The order for a property to be worth more than the property itself. So ridiculous a proposition would be a subject of amusement, were it not for the intense suffering that the people endure under such management.

The shipments of specie continue from this port, although there can be little gained by it as the operations are conducted. The cause of the shipment is however owing, in a great measure, to the continued suspension south, which has a great influence upon the bills drawn for the coming year.

The cotton market at the south is about becoming brisk, and yet there are no signs of resumption on the part of the New Orleans banks. There has been some talk of resumption in different sections, as usual, at this season of the year, in order to induce the dealers and manufacturers of the north to extend their usual credit, in the hope that the currency of the south will become better. We doubt, however, if any of the suspension banks have really entertained the idea of resumption. In Philadelphia, the banks that accepted of the revenue law of last winter, have an immunity for four years to come, and nothing but strong expressions of public opinion can induce them to be honest. Their suspension is made the cloak for the continued dishonesty of the southern banks. The trade of the south, as conducted by the intervention of the banks, is the main cause of the violent fluctuation of financial affairs.—*Money Article, New York Herald.*

The suspended debt of the New Orleans banks is now \$8,000,000. It has been accumulated mostly by the course of business above described, and represents the actual and irretrievable losses on cotton. The bankrupt law will extinguish the most of it, and the only way that the institutions can save the remainder of their capitals is by a prompt resumption.—*Id.*

The state of the southern currency is becoming every day a matter of more serious moment to the people of the United States. The institutions chartered by state legislatures, with the privilege of issuing a paper currency, that has usurped and driven out the constitutional currency, have been, by most of the states, absolved from paying their debts, and, emboldened by success, they seem each day to increase in audacity. The Banks of Virginia are an instance of this absurd and blind disregard of the rights of individuals and the sanctity of contracts. It is well known that the bills of all the banks of the union come to this market, to a greater or less extent, in the discharge of debts due here. These bills are for the most part purchased by those who make that a business, and are sept back for redemption. The price at which they are bought and sold depends, like that of every thing else, upon supply and demand. The supply depends entirely upon the movements of the banks themselves, and the demand during suspensions upon those who have indebtedness falling due to the banks, or those who wish to invest in southern produce. When the banks are paying specie, the matter regulates itself, because the bills, on being sent back to the bank, may be drawn in specie. These bills constitute a debt against the banks of the different sections, being transferred from the merchants to the banks. The banks, then, having assumed the debts of the dealers, refuse to pay. Their bills consequently fall to a discount, in this market, according to the credit of the bank. The Virginia bills were for a long time stationary at four per cent. discount;

within a short time, they have fallen to 6½, a loss of 2½ per cent. on all the funds held by the purchasers here. This is a ruinous loss in a business where ½ to ¾ is called a good profit. Holders, in many cases, being unwilling to submit to this loss, have directed their correspondents to sue out the claims for payment in specie. To counteract this, the banks of Virginia have boldly threatened with proscription any person there who should assist this movement. High-handed as this measure is, it will not avail them, as we are aware that steps have been taken to compel payment in specie of large sums held. This is the only way in which the dishonest banks can be brought to terms. When they are threatened, or the public mind becomes excited on the subject, they state that they are "preparing to resume," and will soon do so. In this way they manage to stave off suits.—*Id.*

\$100,000 more in specie has been recently sent by the bank of Chillicothe to New York. That is, this bank which refuses to pay specie for its notes, continues to sell its stock of specie for the profit of 10 or 15 per cent. which its notes are depreciated.

On November 10th.—The Argo, for Havre, carried out, from New York, \$129,000 in specie. The Switzerland, for England, took \$80,000 in specie, on the 12th.

November 13th.—The depreciation at New York of Virginia bank notes, (by the prices current,) was 6 to 7 per cent. while those of North Carolina, also non-specie-paying, were at 4 to 4½ only.

The National Gazette says—"We learn that suits have been instituted by one of our citizens against a number of the individuals who were members of the Board of Directors of the Bank of the United States in 1839. The last dividend declared by the bank was in that year. The suits are understood to be instituted for the purpose of recovering a claim against the bank under a provision of its charter, which is as follows:

"If the directors of the bank shall make any dividends which shall impair the capital stock of said bank, the directors consenting thereto shall be liable in their individual capacities to such corporation for the amount of the stock so divided; and each director present when such dividend shall be made, shall be adjudged to be consenting thereto, unless he forthwith enter his protest on the minutes of the board, and give public notice to the stockholders of the declaring of such dividend."

[If there be not the like provision in all bank charters, there ought to be, as it is the only rule for honest procedure. If the directors of the Bank of Virginia were subjected to it, would they not have to pay (if they could) the amount of the last declared dividend? We earnestly hope that the directors of the United States Bank may be made to feel the full force of this provision of the charter.—Ed. F. R.]

*Bank directors, look out!*—"An indictment for a high misdemeanor has been brought by the grand jury of the superior court against the president of the Western Bank of Georgia, for the refusal of the bank to pay specie. There is a provision of the charter of that bank, which declares that the bank shall not at any time refuse to pay specie, and that upon such refusal the charter shall be forfeited. There is also a section of the penal code, which provides, that if any bank officer shall violate any provision of the charter he shall be indicted for a high misdemeanor."—*Pub. Ledger.*

Friday, November 26, 1841.

The steam ship Caledonia arrived at Boston on the 18th from Liverpool in 14 days, bringing accounts 12 days later.

A great fire occurred on the night of the 30th ult. in the Tower of London—from historical associations,

the most venerable and the most architectural monument in England. The jewels of the crown were placed in imminent jeopardy by the catastrophe, and the fire was with great difficulty prevented extending to the arsenal. The armory, which was consumed, contained about 300,000 muskets, and the loss, with the cost of rebuilding that part of the structure, will exceed £400,000.

A stupendous fraud has been discovered in the issue of exchequer bills, which appears to have been continued for several years, and so far as had appeared amounted to about £350,000. The cotton market remained without any material alteration. There is no later news from China. The Lords of the Treasury have authorized the admission of the rough rice from the United States at 1d. per quarter. It is said that the Irish peasantry will this year be exposed to the terrible calamity of a failure of the potato crop. It is also known that the wheat and oat crops are one third below the average, and the price of meat is rising on account of a distemper among the cattle. The abortive attempt in Spain had been completely crushed. A conspiracy had been detected at Brussels, and a quantity of arms and ammunition seized. The ultimate object of the conspirators was variously reported—some alleging that it was a republic, others a restoration of the Dutch dynasty.—*Public Ledger*.

All the banks of Buffalo, except a "red dog" one, have exploded, and a general suspension is anticipated in the Western New York Banking system. The currency of Western New York has been ruined by the mismanagement of the present state government. In the old "infected district" both the state banking systems, (the "safety fund" and the "free banking") have now exploded and become mere wrecks. Throughout the last summer and autumn, up to the day they blew up, these banks had been sustained by the state government, merely for political purposes—and they are now permitted to fall to pieces and to cheat the hard working community, solely to embarrass the next legislature. From the time of Rathbun, who is now expiating his forgeries in Auburn State Prison, up to the present day, the banking, political and commercial system of Western New York has been terribly demoralizing. We see its results in such spectacles as Rathbun in Auburn, Mitchell in the court of sessions, and a general suspension of all the Buffalo banks, and the probable downfall of many now standing up like drunken men, in that region.—*N. Y. Her.*

Gen. Santa Ana is now undisputed master of Mexico. Having put down all opposition by military force, he was elected president of the republic of Mexico by a junta of his own appointment. This is a very convenient and quiet mode of election, and well suited for such a republic as Mexico.

The authorities of the New Orleans banks have had a formal meeting, and resolved that it was expedient to resume specie payments *a year hence!!!* They might as well have fixed upon the day of judgment, which will be full as early as these or any other banks will *voluntarily* resume payment. But though we have no faith in any *voluntary* resumption by the banks, or even of their being ever compelled thereto by the legislative power alone, in Virginia or elsewhere, yet there are numerous and strong indications of resumption being speedily compelled by the popular will, acting authoritatively on the government and *legally* on the banks, to force a return to resumption of payments. The question of early resumption is now, and for the first time, fully before the public, every where, and especially in Virginia. The banknote newspapers, are clamoring for continued suspension—and even some others that claim to be for resumption, are for postponing it for nearly another year more. But whatever the banks and the legislative power

may choose, they *cannot* much longer maintain the reign of dishonesty in an irredeemable and depreciated paper currency, after its being borne for nearly five years. We love especially to copy truths on this subject from banknote newspapers, when such rare opportunities occur. The last mail brings something in this way from our friends the editors of the Richmond Compiler and the Augusta Chronicle. The former say—"There has been such a continuation of abuse of banking, of erroneous legislation with regard to it, and such a succession of disappointments of just expectations, that we may well wonder that the condition of things is not worse than it is. Nothing but the indomitable spirit and recuperative energies of our country could have sustained it so well under such trying events." And the latter say—"Our observation of Georgia legislation on the subject of banks and currency, has satisfied us long since, that in the main, the currency is better when the Legislature has least to do with it, for the body is composed, generally of such a mass of ignorance and stupidity, on all subjects connected with banking and currency, that a majority of them have not sufficient capacity to profit by the plainest lessons of experience." Now we heartily concur in these opinions, and to the application of each one to both the legislatures referred to. And when it is considered that almost every thing done by both legislatures in regard to banks, and especially for the last five years, has been to sustain and pamper them with exclusive privileges, and to indulge their offences and pardon their iniquities, failures and frauds on the community—and that almost nothing has yet been done to restrain their evils or to punish their misdeeds, the legislators and banks could scarcely be more strongly condemned than in the above quoted words of banknote editors.

"There was some hope that the legislature of Virginia would have compelled a resumption within the limits of that state, but the example of New Orleans will now be made the pretext for continuing to shave the public with depreciated paper, under the pretence of calling it exchange. The banks will now without scruple ship their specie to New York, and buy up their own paper at as high rates of discount as possible. This can be done in two ways; one is to keep an agent here for the purpose of using the funds of the banks maturing in this city for the direct purchase of the money, as it is offered in Wall street by those who bring it or receive it as a remittance from the South. The other is, instead of paying the bills in specie, when presented at their counters, they ship their specie to the agent here and sell bills drawn against it at ten to fifteen per cent. premium, which is in fact buying their own bills at their own counters at 15 per cent. discount. Intelligent men are found who submit to this robbery, and innocently complain of the "high rate of exchange." The bank officer laughs in his sleeve, and condoles with him on the "hard times," and joins him in cursing "Captain Tyler for vetoing the bank," and sometimes persuades him that the high rate of exchange is because the New York banks "won't suspend." The man pays his 15 per cent. shave, and goes off, satisfied that nothing but universal bankruptcy can restore the currency. So credulous are the southern people. Year after year they permit themselves to be plundered on the shallowest pretences. The banks send their specie to New York. It accumulates here and goes to Europe. The banks then say they cannot resume, because the specie is leaving them."—*N. Y. Her.*

**Pork.**—The American publishes this morning a letter from Kanawha, (Va.) which says that there are about 20 or 25,000 hogs on the road leading from Owensville, Kentucky, to Charlestown, Kanawha; and about 8 or 10,000 on the road from Point Pleasant to that place. Some 5 or 6,000 have passed through that village to the eastern markets. Price in Charlestown,

\$3.00 per hundred, cash. The number of hogs brought this fall to Virginia, will, it is supposed, be larger than in any year for the last four or five.

The Pittsburgh Daily American of the 8th. instant, says, "we are told upon good authority, that pork can now be contracted for, in the interior of Indiana, for \$1.50 per 100 pounds."

*Specie on the move.*—The Chillicothe (Ohio) Advertiser states that the bank of Chillicothe, last week, shipped between sixty and one hundred thousand dollars in specie to New York.

Large sums have also lately been drawn from St. Louis, (Missouri.) These shipments, from points so remote, indicate the imperious character of the foreign demand for coin, and are equally demonstrative of the ruinous nature of the trade in which the country is engaged.—*Baltimore Patriot, (Bankite.)*

The specie still leaving the country. The ship Switzerland from New York took out \$80,000 in specie for England. On the 15th inst. \$30,000 went by the Sheffield. The Great Western, detained for the 23d, had engaged (on the 17th) nearly \$500,000 mostly in gold. The Boston carried out \$100,000; The Francis the First took \$109,000 for Havre; making for one week, \$739,000 shipped to Europe. The New York Herald adds,—“The Bank of Chillicothe, Ohio, has recently sent about \$150,000 [specie] to this city, for the purpose of drawing against at 10 per cent. premium for its own bills. It is in this way that specie is driven from the interior, to this city, by the presence of irredeemable paper, and from this city flows off to Europe.”—*Money Art. N. Y. H.*

The Union Bank of Mississippi has assigned its effects for the benefit of its creditors. Messrs. James Elliot, Charles Scott and C. W. Clifton are the Assignees, and are the President, the Cashier, and the Attorney of the institution! The salaries voted them are \$4000 per annum each. The movement is said to be a collusion between the officers and a few of the directors, and the object to plunder the bank of its valuable assets. Much exasperation is evinced relative to the matter.—*Ph. Ledger.*

In addition to Maryland and Georgia, the more recent elections of Pennsylvania, Ohio, New York and Michigan have gone by large majorities in favor of the loco-foco party, (we know not by what other name to designate it, in the present strange condition of parties.) These results are a sure indication of

the triumphant majorities being opposed to the re-establishment of the United States Bank. *Perhaps*, also, they may be taken as evidence of as general a feeling adverse to the whole fraudulent banking system. *But this we still fear to believe*, and can not trust any existing party for that extent of honesty.

The last elections, those of Mississippi, go still further. The issue was made upon the policy of paying or not paying the state bonds, or public debt, and the anti-bond men are triumphant. It is a deplorable thing that any people or government, however cheated and abused in the manner of forming the debts, (as Mississippi undoubtedly was cheated,) should deny their obligation. But it is one of the legitimate results of the fraudulent paper credit system, in its worst operation; and this refusal of Mississippi to pay her debts will be followed by other of the most debt-burdened and bank cheated states. Pennsylvania and Florida will follow the example—probably Illinois, Michigan and Indiana, if not more. The public credit of all the states will be deeply affected.

At a large political meeting in New Orleans, on November 13th, the following resolution was passed unanimously—“Resolved, that we consider the suspension of specie payments by the banks of this state as having commenced in perfidy, and as being continued in fraud; that the late determination on the part of the banks not to resume until the first of November 1842, is considered by this meeting as a violation of common honesty, equally injurious to the moral character and commercial interest of our city.”—*Charleston Mercury.*

Benjamin Green, the great Richmond financier was acquitted upon his last trial. He was remanded to jail, to be tried upon the more than twenty still remaining indictments. No doubt he will be cleared on all; but at the same rate of progress, he will be forty years under trial. We would advise the losers of the half million (the stock-holders of the Virginia Bank) to drop Green and Dabney, and to sue the then directors of the bank, who could scarcely escape paying the legal penalty of *double* each suitor's loss by the defalcation. See the general banking law.

As the furnishing a “Summary of News” was commenced with and principally for the issue of the *weekly* form of the Farmers' Register, so the two will cease together with this number.

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# THE FARMERS' REGISTER.

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EDMUND RUFFIN, EDITOR AND PROPRIETOR.

## OF TRANSPLANTING.

From Lindley's Horticulture.

As soon as man attempted to beautify his residence with trees planted round it, he would naturally obtain them from the forest; and he then would find that, of many that he removed, all or some at least would die: if however he persevered, he would at last discover that while constant failure attended his efforts at one time, comparative success would crown them at another; and he would thus be led to investigate, according to his skill, the causes of success and failure. Out of this would grow in time the art of transplanting, among the most important business of the gardener.

I fear, however, it is too generally practiced as an empirical art, without sufficient attention being paid to the principles on which its success or failure depends; at least, one hardly knows how to draw any other conclusion from the opposite opinions held by planters, the dogmatical manner in which they are too often expressed, and the obscure and unintelligible phraseology of what are called explanations of the practice by amateurs, to whom it is not necessary to allude more particularly. If there is any one part of the art of horticulture in which *post hoc* has been mistaken for *propter hoc* more commonly than another, it is surely in what concerns transplantation.\* And yet the rationale is simple enough, if we do not labor to render it confused by imaginary refinements.

When a plant is taken out of the ground for transplanting, its roots are necessarily more or less injured in the process, and consequently it is less able to support the stem than it was before the mutilation took place; its loss of this power will also be in proportion to the extent of the mutilation, which may be carried so far as to amount to destruction.

But the importance of their roots to plants is not alike at all seasons; in the summer, when there is the greatest demand upon them in consequence of the perspiration of the foliage they are most essential; in winter, when the leaves have fallen, they are comparatively unimportant, as is evident from a very common case. Let a limb of a tree be felled in full leaf in June; its foliage will presently wither, the bark will shrivel and dry up, and the whole will speedily perish; but, if a similar limb is lopped in November, when its foliage has naturally fallen off, it will exhibit no sign of death during winter, nor till the return of spring, when it may make a dying effort to recover; but the means it takes to do so, namely, the emission of leaves, only accelerates its end.

These two propositions really include all the most essential parts of the theory of transplan-

\* It is scarcely necessary to say that these remarks do not, in any way, apply to Mr. Macnab's *Hints on the planting and general treatment of hardy Evergreens in the climate of Scotland*; an excellent treatise, which it is impossible to recommend too strongly to the attention of the planter.

tion, as will presently be seen: it is necessary, however, that they should be applied in some detail; for which purpose it will be convenient to consider, first, the season, and, secondly, the manner, in which transplanting can be best effected.

It is the powerful perspiratory action of the leaves of deciduous trees which renders transplanting them in a growing state so difficult, that for practical purposes it may be called impossible; for the operation is necessarily\* attended by a mutilation of the roots which feed the leaves. At no period, then, can the operation be performed if such plants are growing. Even if the buds are only pushing, the process should be avoided, because immediately after that period the demand upon the roots is greatest; for although in consequence of the smallness of the surface of the young leaves the action of perspiration may seem to be feeble, yet the thinness of the newly formed tissue will not enable it to resist the drying action of the atmosphere unless there is a most abundant afflux of sap from the roots. In England, too, the months when buds begin to burst forth are objectionable, not only on account of their dryness, but of their coldness, which prevents the free circulation of sap; and their evil effects are felt not only by the roots through the foliage, but directly, as will be shown hereafter. The season, then, which ought to be chosen is the period that intervenes between the fall of the leaf in autumn and the earliest part of spring, before the sap begins to move and the dry cold winds of that season to prevail. I entirely agree with Mr. Macnab, that the earliest time at which planting can be effected is, upon the whole, the best; a conclusion to which he has come from his extensive practice, in which my own observation of a great deal of planting for the last twenty-five years coincides, and which is, in all respects, conformable to theory. As soon as a plant has shed its leaves, it is as much at rest for the season as it will be at any subsequent period, unless it is frozen; its torpor, indeed, is greater at that time, because its excitability is completely exhausted by the season of growth, and it has had no time to recover it. If, at that time, a root is wounded, a process of granulation or cicatrization will commence, just as it does in cuttings, and from that granulation, which is a mere development of the horizontal cellular system, roots will eventually proceed. Now, it is obvious that since roots must be wounded in the process of transplantation, the sooner the wound is made the better, because it has the longer time in which to heal: and therefore the earlier in the autumn transplanting is effected, the less injury will be sustained by the plant submitted to the process; in the technical language of the gardener, "it has the more time to establish itself."

\* Transplanting from garden pots, in which the roots are preserved artificially from injury, may be performed equally well at any time, if care is taken, and is, of course, not included in this statement.

Autumn and midwinter are, moreover, the best seasons, because of their great dampness. It will be seen by reference to Mr. Thompson's tables, that the air is very generally in a state of saturation in the months of October, November, December, January, and February, and that it is seldom in that condition at any other season. Now, although the perspiration of plants is greatly diminished by the removal of the leaves, it is not destroyed, for they also perspire through their young bark; and therefore a saturated atmosphere, which prevents much of the perspiratory action which remains from being exercised, is a condition, even when plants are leafless, much too beneficial to be overlooked. Nor is the action upon the perspiratory power of the stem the only mode in which a saturated atmosphere is important at the time of transplantation; it exercises a directly favorable influence on the roots themselves. Roots, at their spongy, or most absorbent points, are extremely delicate parts, unprotected by a fully organized epidermis, destined to exist in a moist medium, and capable of being easily killed by exposure to dryness as well as by actual violence. The accidents to which the roots of transplanted trees are liable, from the very nature of the operation, are of such a kind that it is impossible to prevent their being exposed to the air, sometimes for considerable periods of time; it is therefore obviously a point of the first importance, that the air should be as nearly of the humidity of the soil from which the roots have been extracted as can be secured. How unfavorable, in this point of view, the months of March, April, and May are for planting, is apparent from Mr. Thompson's tables above referred to; how little the matter is attended to by nurserymen, gardeners, and laborers, all great planters know to their cost. Mr. Macnab, who thoroughly understands all this, prefers a moist rainy day; although, as he says, he has "at times been as wet in planting evergreens, as when exposed for hours on the windy side of Ben Nevis in a wet day, without great coat and with a broken umbrella." It may be very true that good plantations have been made in March and April; it may be equally true that no such care as I have described is necessary for all plants; but no wise man would, on that account, neglect the precautions which the nature of plants shows to be necessary to insure success with all things. Very wet and late springs may prevent the loss of any considerable proportion of the trees planted in March and April, especially if succeeded by a dull, warm, wet summer; and a willow may be planted with success at midsummer: but we cannot tell beforehand what sort of spring is coming, and all plants have not the tenacity of life possessed by a willow.

If the months of November and December are the most favorable for transplanting deciduous trees, and March and April the worst, how much more important must be those periods to evergreens. An evergreen differs from a deciduous plant in this material circumstance, that it has no season of rest; its leaves remain alive and active during the winter, and consequently it is in a state of perpetual growth. I do not mean that it is always lengthening itself in the form of new branches, for this happens periodically only in evergreens, and is usually confined to the spring; but that its circulation, perspiration, assimilation, and produc-

tion of roots are incessant. Such being the case, an evergreen, when transplanted, is liable to the same risks as deciduous plants in full leaf, with one essential difference. The leaves of evergreens are provided with a thick hard epidermis which is tender and readily permeable to aqueous exhalations only when quite young, and which becomes very firm and tough by the arrival of winter, whence the rigidity always observable in the foliage of evergreen trees and shrubs. Such a coating as this is capable, in a much less degree than one of a thinner texture, such as we find upon deciduous plants, of parting with aqueous vapor; and moreover its stomates are few, small, comparatively inactive, and chiefly confined to the under side, where they are less exposed to dryness than if they were on the upper side also. But although evergreens, from their structure, are not liable to be affected by the same external circumstances as deciduous plants, in the same degree; and although, therefore, transplanting an evergreen in leaf is not the same thing as transplanting a deciduous tree in the same condition, yet it must be obvious that the great extent of perspiring surface upon the one, however low its action, constitutes much difficulty, superadded to whatever difficulty there may be in the other case. Hence we are irresistibly driven to the conclusion, that whatever care is required in the selection of a suitable season, damp, and not too cold, for a deciduous tree, is still more essential for an evergreen. It is, therefore, most extraordinary that it should have ever been the practice to defer the planting evergreens till late in the spring, upon the supposition that it is the very best season for them, and that midsummer even is a proper period; as if cold winds, accompanied by from 20° to 30° of dryness in the air, which is not more than 500 or 357 of moisture, with a bright sun beating on the roots which are exposed, and exciting the action of the perspiring surface to the utmost extent of its power, were external conditions with which the gardener has no concern: and yet, as Mr. Macnab justly observes, half a day's sun in spring and autumn will do more harm immediately after planting, than a whole week's sun from morning to night in the middle of winter.

The holly, says a writer in the *Horticultural Transactions*, does not succeed well, if transplanted at any other season of the year than the end of April or beginning of May; at this time the buds are just breaking open into leaf, and I have rarely failed of success in transplanting small, or even very large old trees, (i. 357). Although such statements cannot be too strongly contradicted as guides to practice, yet it is not difficult to explain their origin. As evergreens are never deprived of their leaves, so they are never incapable of forming roots; on the contrary, they produce them abundantly all winter long, and rapidly at any other period of the year which is favorable to their growth: so that they are capable of making good an injury to their roots much more speedily than deciduous plants; especially as in the majority of cases the roots are numerous and fibrous, and not so liable to extensive mutilation when transplanted. Now, if an evergreen is planted in the month of May, and the weather happens to be cloudy, mild, and damp, as the plant is just then commencing the renewal of its growth, and is forming fresh roots abundantly, if such a

state of weather lasts for a week or two, there is no doubt that the plant will succeed very well; and so it will if removed at midsummer. In the year 1822, in the month of August, there were planted in the garden of the Horticultural Society of London above 6000 hollies, from two to three feet high, for the purpose of forming fences: few plants in all that number ever exhibited any traces of having been removed, and I do not believe that a hundred died. The weather was dry; but the plants were deluged with water when placed in their holes, and they had been obtained from the Regent's Park, where they grew in the stiff plastic clay of that side of London; the consequence of which was, that, when taken out of the ground, so much earth adhered to them, that they were almost in the state of plants removed from pots. Now, is this a case to justify planting hollies in the month of August? Surely not; it only shows that it may be done under a combination of very propitious circumstances. There may be local conditions of a permanent nature, owing to the peculiarity of climate, in which those advantages may be calculated upon; but they do not justify the gardener in taking a season of great risk, instead of a season of perfect certainty. I have seen tens of thousands of hollies planted late in the spring in the county of Norfolk, and in the quarters, too, of nurseries, where, from the plants shading each other, they are far more likely to succeed than if exposed singly; and although it sometimes happened that a good many lived, it is not too much to say that three-fifths at least would die; and it is perfectly well known that if planted in the beginning of November no such loss is sustained. In short, I am certain that if experience is looked to only, it will give the same answer as theory to the question of what season is the best for planting evergreens, namely, that which is best for other trees; and such cases to the contrary as may appear to exist will always be found exceptions to the rule, in consequence of some peculiar circumstances attending them; not unfrequently, I believe, from the operation having been performed upon a very small number of plants, to the removal of which a degree of care was given wholly incompatible with general and extensive practice.\*

\* [These remarks must be received with great modification, especially in the northern and eastern states. The moist or rainy winters of England are the exact opposite of our cold and dry ones, during which, for two months at least, the soil is severely frozen, and vegetation is nearly or quite dormant. Our whole experience goes to prove that the practice of transplanting evergreens in autumn is, for this country, extremely injudicious, as the damage which the trees sustain in their removal greatly increases their susceptibility to injury by the cold of winter. The early spring is the most favorable period for the purpose; since the abundant and long-continued rains which occur from the vernal equinox to the middle of April enable the plant to recover itself, and emit new roots with rapidity. We have been very successful in May, but then so much depends upon the occurrence of rainy weather, that the risk is greatly increased. Next to the selection of the proper time, the preservation of the roots in a moist condition is the most essential point, in removing all evergreen trees. These remarks are not applicable to a different mode of transplanting large evergreen and other trees, which is very successfully practised in this country; that of remov-

Mr. Macnab rightly adverts to the importance of choosing a suitable day, as well as season, for the operation; and it must be evident from what has now been stated, that this is very necessary; as, however, the theory of this is the same as that of the season, it will be sufficient to quote this excellent practical gardener's rules. In winter, you may plant with perfect safety in a dull calm day, whereas in spring or autumn a moist rainy day is preferable to any other; but where a person has not the choice of such weather, then the work should be performed in the evening, when the sun gets low, especially in spring or autumn planting.

Next in importance to the selection of a fitting season, is the preservation of the roots of transplanted trees; the former is of little consequence, if the latter is not more carefully attended to. We know, indeed, that some plants will live with the rudest treatment, and bear the most severe mutilation without much suffering; but those are special instances of extreme tenacity of life, and do not affect general principles. The value of great attention to the roots, in the operation of shifting, has already been pointed out, and transplanting is only shifting in another manner. It would be the duty of the gardener to save every minute fibre of the roots, if it were practicable; but, as that is not the case, his care must be confined to lifting his trees with the least possible destruction of those important organs; remembering always that it is not by the coarse old woody roots that the absorption of food is carried on, but by the younger parts, and especially the spongioles. The mechanical means by which this is best effected do not belong to the present subject; I may, however, remark, without quitting the limits of theory, that, as the greater part of the young fibres is produced at the circumference of the circle formed by the root, the earth should be first removed at some distance from the stem, so as to insure, as far as possible, their being taken up entire; if this is not done, but the spade is struck into the earth near the stem, or if the rude nursery practice, justly enough called drawing, is employed, a large part of the most valuable roots must necessarily be cut off or destroyed by tearing. The greatest difficulty, beyond that of mechanical removal, in transplanting trees of considerable size, is this preservation of roots; and, if it were possible to carry without injury such heavy masses as old forest trees, there is no physical obstacle to transplanting them, if the extrication of the fibrous part of the roots be secured, which is not

ing them with large frozen balls of earth in midwinter. The trees to be removed are selected, and the holes prepared for their reception in autumn, while the ground is yet open. When the ground is slightly frozen, the operator proceeds to dig a trench around the tree, at some distance from its trunk, gradually undermining it, and leaving the principal mass of roots embodied in the ball of earth which is left to freeze pretty thoroughly. At a favorable time during the winter, the tree with the ball of frozen earth is rolled upon a sled drawn by oxen, by which it is readily transferred to the hole previously prepared for its reception, and placed in the proper position; and as soon as the weather becomes milder, the earth is properly filled in around the ball. In this way, a tree twenty-five feet high may be transplanted, so as scarcely to exhibit, during the ensuing season, any ill effects from the change of location. A. J. D.]

impracticable. As, however, the latter is a troublesome and very difficult operation, even when trees are only ten or twelve feet high, it has been, from time out of mind, the custom of skilful planters to prepare such trees for removal by cutting back their main roots one year before they are to be transplanted; if this very simple operation is properly performed, all the principal limbs, so amputated, will emit young fibres in abundance from their extremities, and the gardener, from knowing where to find those roots, can easily take them up without material injury. In order to effect the same end, but in another way, the following expedient has been occasionally employed for large trees. A deep trench has been opened, in mid-winter, round a stem, at such a distance as to be clear of the principal fibres; the tree has then been carefully undermined, till, at last, the earth belonging to it has formed a huge ball; upon the approach of frost, water has been freely poured over the ball so that its whole surface may be converted into an icy mass; in that state it has been raised by powerful tackle, and conveyed without disturbance to its intended site. This operation, which is the best possible for hardy trees of great size, but expensive, and therefore only capable of application in a limited degree, owes its success entirely to the young and tender fibres being placed in such a position that they cannot be injured by the act of transport.

Under all ordinary circumstances, the roots must necessarily be injured more or less by removal; in that case, all the larger wounds should be cut to a clean smooth face; not in long ragged slivers, as is often the case, and which is only substituting one kind of mutilation for another, but at an angle of about 45°, or less. If the ends of small roots are bruised, they generally die back a little way, and then emit fresh spongioles; but the larger roots, when bruised, lose the vitality of their broken extremity, their ragged tissue remains open to the uncontrolled introduction of water, decays in consequence of being in contact with an excess of this fluid, and often becomes the seat of disease which spreads to parts that would otherwise be healthy. When, however, the wound is made clean by a skilful pruner, the vessels all contract, and prevent the introduction of an excess of water into the interior; the wound heals by granulations formed by the living tissue, and the readiness with which this takes place is in proportion to the smallness of the wound. It may be sometimes advantageous to remove large parts of the coarser roots of a tree, even if they are not accidentally wounded when taken up, the object being to compel the plant to throw out, in room of those comparatively inactive subterranean limbs, a supply of young active fibres. This is a common practice in the nurseries in transplanting young oaks and other saprooted trees, and is one of the means employed by the Lancashire growers of gooseberries, in order to increase the vigor of their bushes; in the last case, however, the operation is not confined to the time when transplantation takes place, but is practised annually upon digging the gooseberry borders. The reason why cutting off portions of the principal roots causes a production of fibres appears to be this: the roots are produced by organizable matter sent downwards from the stem, that matter, if uninterrupted, will flow along the main branches of the roots, until it reaches the ex-

trimities, adding largely to the wood and horizontal growth of the root, but increasing, in a very slight degree, the absorbent powers: but if a large limb of the roots is amputated, the powers of the stem remaining the same, all that descending organizable matter which would have been expended in adding to the thickness of the amputated part is arrested at the line of amputation; and, unable to pass further on, rapidly produces granulations, to heal the wound, and immediately afterwards young spongioles, which soon establish themselves in the surrounding soil, and become the points of new active fibres.

The question of pruning the branches of transplanted trees has been already sufficiently adverted to.

By many excellent planters, the advantage of deluging the roots with water, when newly planted, is much insisted on; and in the case of large plants, particularly evergreens, it is, undoubtedly, an essential process, partly because it causes the flagging and injured roots to be immediately surrounded by an abundant supply of liquid food, which, if the operation be skilfully performed, (see Macnab's *Treatise*, p. 24 and 25), will not subsequently fail them; and partly because it is the only means we possess of embedding with certainty all the fibres in soil. When the earth is reduced to the state of puddle, it will settle round the finest roots, and place them as nearly as possible in the same condition, with regard to the soil, that they were in before the plants were removed. But the operation of puddling is unnecessary to small plants, if removed at a proper season of the year, especially to deciduous trees of all kinds; and it may be very injurious. This was long ago stated by Mr. Knight, (*Hort. Trans.*, iii., 159), who found by experience that when trees are very much out of health, in consequence of having become dry, excess of moisture to the roots is often fatal. This appears to arise from the languid powers of the plant being insufficient to enable it to decompose and assimilate the water rapidly introduced into its system through the wounds in its root, and by the hygrometrical force of that part; under such circumstances, water will dissolve the mucilaginous and other matters intended for the support of the nascent buds, which matters then putrefy, lose their nutritive quality, and rapidly destroy the tissue. The substitute for root-watering contrived by Mr. Knight in such cases was, to keep the plants in a situation shaded from the morning sun, and to moisten their bark frequently; by these means, water is presented to them very slowly through the young cortical integument which, partaking of the nature of a leaf, slowly absorbs it, probably decomposes it, and transmits it laterally through the liber into the alburnum, where it finds itself in the ordinary channel for the ascending sap, and thus enters the system of circulation. In this way Mr. Knight originally preserved American apple trees, which reached him in the middle of April, in so bad a state that they seemed "perfectly lifeless and dry, and much better fitted for fire-wood than for planting."



## SURFACE MANURING.

To the Editor of the Farmer's Register.

Nov. 20th, 1841.

In your Weekly Register, dated the 12th of this month, I find that one of your South Carolina correspondents has requested me to inform him, "*whether I have made any further experiments*" in addition to those which I mentioned in your second volume, relative to the surface application of manures; "*and what my present opinion is on that subject?*" It gratifies me to reply that I have made some similar experiments since that time and have witnessed several made by others—all of which, without a single exception, contribute to confirm the opinion there expressed—that surface manuring is best. It is true that nearly all these trials were made on cow-penned land, and in the following manner. The pens were made as early in the spring as it is customary to pen cattle; during the whole season they were kept of the same size, and the same number of cattle penned in them. They were removed at regular intervals of time, when they were alternately ploughed up and left unploughed. In the following spring they were planted in corn—to be followed by wheat in the fall; and in all these cases both the corn and the wheat on the unploughed pens were so much better than what grew where the pens had been ploughed up, that the lines of each pen might be traced as plainly as if the fences had still been standing. These are indisputable facts, and are now so generally known in my part of the country, that it is now a very rare thing to see cow-pens ploughed up as soon as the fence is removed.

Still I am aware that "*the derisive stare of incredulity*" which seems to have so much annoyed your South Carolina correspondent, will be equally excited against myself, in some parts of our country far north of him. But if he will take my advice, he will e'en let them deride or stare as may best suit their fancy; for such persons generally belong to a class of men far too happy in their own conceits to receive the smallest benefit from any thing that either he or I could say on this, or any other subject. For his own satisfaction, however, I will respectfully suggest, that if he will examine the matter further, he will find, that the "*modus operandi*" of manures applied to the surface of land can be explained on philosophical principles, in a manner quite as satisfactory as any other fact in relation to manures, notwithstanding the prevalent opinion amongst his acquaintances may be directly opposed to his own. I remain, dear sir, yours, very sincerely,

JAMES M. GARNETT.

## WOOLLEN RAGS.

From Johnson's work on Fertilizers.

These are almost entirely composed of animal matter; they are found to contain a very large proportion of albumen, (a substance similar in appearance to boiled white of egg,) minute portions of lime and silica, and traces of various salts. They form, therefore, an excellent manure by slowly decomposing in the soil; and are found to remain dissolving in it, and forming soluble and

elastic matters for the service of plants, when applied at the rate of twelve hundred weight per acre, for periods varying from two years on the heavy clays. The lightness of carriage, and its readiness, as well as cleanliness of application, render it peculiarly eligible as a fertilizer; it keeps, too, for any length of time, until the farmer is ready to apply it to his ground, and is much more slowly decomposed and consumed, than either blubber rape cake, train oil, or bone dust.

Of these rags, the consumption by the Berkshire and Oxfordshire farmers, and especially in Kent for the hop grounds, is very considerable. I am informed by an extensive dealer in these rags, that at least 20,000 tons are annually consumed by the farmers of the south of England. My informant himself has a sale of more than 500 tons per annum, which he delivers free on board a vessel, at any of the London wharves, for five guineas per ton. The custom of the farmer is, to cut the woollen rags by means of a chopper and block, into pieces about the size of a crown piece, and then spread them on their fields by hand, out of a common seed basket, as evenly as they can; they find that this manure is admirably adapted for hops, wheat, turnips, &c., and that the beneficial effect is as great the second year as the first; it appears that one farmer in Kent, Mr. Ellis, of Barming, purchases annually four or five hundred tons of these rags, almost exclusively for his hop grounds. The farmers of Kent think the application of the rags warms the ground; they certainly, as they slowly putrefy in the soil, afford nourishment to the crop, for wool is composed almost entirely of a peculiar animal matter, with a slight portion of phosphate of lime, or earthy matter of bones.

The very cottager is interested in these facts—for every shred of an old woollen garment is available for his garden, is an admirable manure for his potato ground, or if he has not a garden, the poor collectors of these rags, who travel about for the large dealers, will readily give him a farthing per pound for all he can collect; and yet, judging by the careless way in which very old clothes are often to be seen absolutely thrown away, in some country places, I should certainly conclude that the inhabitants were not aware of their value.

## CORN FROM SEED TWO THOUSAND YEARS OLD.

At the annual dinner of the Southwest Middlesex Agricultural Association, held on Friday last at the Adam and Eve Inn, Hayes, near Uxbridge, Mr. H. Pownall, of Spring Grove, Hounslow, while eulogizing the farmers of Middlesex on their high degree of intelligence and practical judgment, produced a head of corn, which he said had been grown in the neighborhood of his residence, and, as a proof of their meriting the eulogy he had passed upon them, stated that he had that day shown the head of corn to Mr. Sherborn, of Bedfont, who, on examining it, immediately said it was Egyptian corn, which Mr. Pownall said was the fact, as it had grown from grain found within the covering of an Egyptian mummy, within which it had been enclosed for upwards of 2000 years, a statement which produced a great sensation throughout the assemblage.—*London paper.*

## AN ADDRESS DELIVERED BEFORE THE AGRICULTURAL SOCIETY OF FREDERICKSBURG,

At their annual meeting, cattle show and fair, on the 12th of November, 1841.

By James M. Garnett, president.

*Brother farmers and planters:*—Early in the present year, I had prepared myself to make a greater variety of comparative experiments than usual;—first, with 5 varieties of yellow corn, and 4 of white;—next, with 3 varieties of Irish potatoes—and lastly, with 12 varieties of turnips: and until late in summer, I had sanguine hopes of being able to report to you some interesting results. But at the critical period of that season, we were visited by one of those excessive droughts to which our climate has become much more liable of late years, than formerly; and nearly all my hopes were blasted in a very short time. It furnished me, however, with two facts in regard to corn, which I deem worth relating. The first is, that in our climate, the brown corn, so celebrated to the north, begins to tassel and shoot about a week earlier than the Dutton. Both are yellow—both early, but from the smallness of the ears and grain, they do not appear to me well adapted to our purposes. A variety of yellow corn, called *Dutton*, has been cultivated in Westmoreland, and much approved; but I am very sure that it cannot be genuine—at least if mine was so, which I procured from the patent office. The other fact is, that unsuckered corn suffers much more from drought than that which has been suckered, or has not produced any. This opinion was formed from the following circumstance: I had planted two varieties of white corn alongside of some twin-corn; and had left one stalk in a hill—the distance  $4\frac{1}{2}$  feet by 2 feet. There were three rows of each kind, eleven stalks in each, and I had determined not to sucker them. Of the two varieties first mentioned, only 7 stalks of each kind produced suckers; but every stalk of the twin-corn, except three, had from one to 4 or 5 suckers on each. Not one sucker of either variety produced even a nubbin, and all the twin-corn began to fire a week or ten days before the stalks of the other kinds, although there was scarcely any perceptible difference in their tasselling and shooting. Add to this—the ears of the twin-corn were much more imperfect, than on the other two varieties—although all were defective. As a general rule, applicable to most farming operations, it is true that the result of a single experiment should not be deemed conclusive, either for or against any particular practice; but in a case such as I have just stated, one trial appears to me as good as a thousand, to prove the correctness of the conclusion deduced from it. If, then, I am right in believing that unsuckered corn will always suffer most from drought, would it not be the safest practice never to omit suckering; since by my observation, for twenty years past, we have had many more very dry, bad seasons for corn than good ones. Indeed, I am inclined to believe, that the practice of suckering corn is best at all times, for we may say of its origin as of that of the common law, that "*the memory of man runneth not to the contrary*," and I am so far a friend to ancient usages, that I would never

abolish them, until they were certainly proved to be wrong.

The only one of my corn experiments which I hoped would not be frustrated by the drought was a comparative trial between the twin-corn, and a variety obtained from North Carolina, under the name of the Garland corn, which bore a high character in the neighborhood where it grew. Both kinds happened to be planted in swamp land, and, as I thought, had suffered very little. The time of planting—the distance, soil and culture, were precisely the same in regard to both varieties. But, when I came to gather it, such was the difference between the two kinds in their degrees of maturity, and so much had the drought affected both, that I determined to make no farther report about them, as it could not be sufficiently accurate to lead to any useful conclusion.

I will take this opportunity to contradict the common opinion in some parts of our country, that the twin and Baden corn are the same. They are certainly very different at present—at least, in our climate, as I have proved by two comparative trials fairly and fully made. In both these, the twin-corn ripened first by 6 or 8 days, and produced the most. To guard against future mistakes, I would say, that the characteristics of the twin-corn with us, are, a low growth compared with 10 or 12 other varieties of large corn, with which I have compared it—a thinner and softer shuck—a much smaller cob in proportion to the quantity of grain, which is always very white, and rather flinty—the average number of rows on an ear being about 14. Moreover, it produces less unsound corn than any of the varieties with which I have tried it, and more fodder, if the suckers are left, of which it throws out a much greater number than any of them. In consequence of its growing less tall, it will bear being planted 6 inches closer in the row.

Having spoken so favorably of the twin-corn, ever since I began to cultivate it, five years ago, I dare say that some of you, my friends, have already concluded that I have made a hobby of it. But, if I know myself, this is really not the case, for I have no hobbies nor pets in agriculture, whatever I may have in other things. Indeed, if there is any such thing as "*the best*" in matters of husbandry, my opinion always has been, that it is so hard to discover, as to justify a farmer in persevering, during his whole life, to search for it by continual experiments—provided he does not make them at too great an expense. And this too, I believe, he may always do with a reasonable hope of deriving such benefit from some of them as will amply compensate him for all the time and labor of making them. I beg you, my friends, to think well of this, and should you approve the opinion just expressed, then fail not to encourage, both in yourselves and others, the disposition constantly to make experiments on a small and economical scale, in all the branches of your profession. For you may rely upon it, as a thing absolutely certain, that you never will improve much in any of them, unless you will pursue this course.

Two causes marred my potato experiment—the drought and the striped bug—they entirely destroyed the leaves, not only of potatoes, but of the garden beet; although both put out fresh ones

after a time, and the growth of the latter, especially, appeared only a little checked by them. These pestiferous insects appear periodically, for I have not known them, (as well as I recollect,) to do any material injury more than four times during the course of my life; although I have not ascertained the intervals of time between those periods. They are, however, certainly very useful for one purpose, and that is to blister the skin, which they will do quite as effectually as Spanish flies. More than 30 years ago, I have known them to be used in lieu thereof, by two eminent physicians of my acquaintance. Before I quit this subject permit me to recommend an improvement of which I have lately heard, in the garden-culture of potatoes, by which we can obtain them earlier, and by much less labor than in any other way. First plant them, either whole or cut, in well prepared earth, about 15 inches each way, and 3 inches deep. Then cover them 8 or 10 inches deep, with pine leaves—if you can get them—if not, with straw or refuse hay. When fit for use, take them from under cover without disturbing it any more than can be avoided. This practice is followed by many; but the improvement consists in leaving enough potatoes under the same cover, in the fall, to produce a second crop the next year, which they will do, much earlier than you can procure them by any other process.

My experiment with turnips was somewhat more successful—for the 4 varieties sown on the 7th of August, came up well enough, and grew off sufficiently to enable me to determine which produced the greatest quantity of roots, the most top, and most saccharine matter, so far as the concurrent tastes of 3 or 4 persons could decide a thing so questionable. The four kinds were: Sinclair's white flat, the Aberdeen yellow, the purple top tankard, and Dayle's yellow hybrid turnip. Sinclair's white flat turnip produced the most roots, and the least tops; the Scotch-Aberdeen proved the next best; the purple top tankard ranked third in the quantity of roots, but had more tops than either of the other, and Dayle's hybrid was inferior to all, except in tops, which were the next largest to those of the tankards. In regard to sweetness, several who tasted them concurred in pronouncing the Scotch-Aberdeen best, Sinclair's white flat next, Dayle's hybrid third, and the tankards last. The other varieties were sown on the 17th of August, and have not yet attained their full growth, consequently they are ajill in the ground.

Before I quit the subject of experiments, I will once more offer you a brief notice of the Guinea-grass. The experience of the past season has confirmed me in the belief, that it is probably the very best grass we can cultivate in our high, dry soils, especially such as are rather sandy than stiff. Indeed, I believe, that from latitude 39, as far south as our government extends, it would prove our surest reliance as green food for horses and cattle—particularly during seasons of great drought. My reason for thinking so is, that mine has been twice subjected, since I first planted the roots, to this severe test, and on both occasions has remained green, while all the other plants on the farm were suffering extremely. It has both a fibrous and tuberous root, it will grow in ordinary land, to the height of 5 or 6 feet, and

will bear cutting 3 or 4 times, during the season, at an average height of at least 3 feet, which no other grass will do, of which I have any knowledge. After the first year, during which it requires some cultivation, the growth soon thickens so as to smother all other plants that may spring up amongst it; and it is now so acclimated as to spread, not only from its roots, but its seeds, a large proportion of which now ripen with us, although it is still safest to propagate it from the roots. These will bear transportation for several weeks, without losing their vitality, if wrapt up, either in cotton, tow, moss, or soft paper. They may then be buried in the earth, until the season for planting, which is as early as the earth ceases to freeze hard. The roots should be cut into pieces an inch or two long, then buried about 3 inches deep, 5 or 6 inches apart one way, and 12 inches apart the other. Two or three workings with the hand-hoe, during the first year, will amply suffice to insure their thriving, after which they require no more labor but to cut the growth for use.

And now, my friends, having finished my usual detail of experiments, which I fear has proved to many of my hearers more wearisome than instructive, I will once more, perhaps for the last time, venture to offer you a few remarks upon some of the topics which I have so often and earnestly been pressing upon your attention, from our first meeting, twenty odd years ago, to the present moment. But I confess that were I to judge by the apparent condition of our society at this time, or to be influenced in renewing my exhortations by the effects of my previous efforts to promote its utility, I should have but poor encouragement to proceed. If I have yet done any more good than barely to keep our association alive—although in a state generally but little removed from absolute lethargy, I am still ignorant of it. For I am not aware that any of the means have yet been adopted, which I have rarely ever failed to recommend as indispensable to such improvement in the various branches of husbandry as every agricultural society would surely make, if only a small majority of its members would constantly do their duty. Such, for example, as an annual fair, to which all our members, as well as any others of our agricultural brethren, who wished either to sell or to buy something in their particular line, might resort with some certainty of attaining their object. Such fairs form almost a necessary part of every similar society—not only in all the countries of Europe, but in every northern and eastern state of our own country—nay, there is scarcely a town of any note on the continent, or in England, Scotland, or Ireland, without them. Can you believe it possible that that they would be kept up, and more and more encouraged in all these countries, if they did not prove highly beneficial? Or is it credible that they can be useful there and useless here? Surely not, my good friends; and yet not a solitary attempt have you ever made to hold one; although in this very town, 50 or 60 years ago, a fair was annually held in the month of June, which (as I have heard,) usually lasted for a week, and was enormously attended by the planters and farmers of all the surrounding counties.

Another of my recommendations, and one that I deemed of still more importance towards

accomplishing the beneficent objects for which we had associated together, but which has been almost entirely disregarded, was, that every member who was a cultivator of the soil, should make a verbal or written report, at each of our anniversary meetings, of his agricultural experiences. This would prove a means, not only of stimulating himself to improve in his vocation, (for he would be ashamed to report that he had been a mere "sleeping partner" in our concern,) but probably of informing us, his brethren, of something useful that we knew not before, and which might add to the general stock of agricultural knowledge throughout the portion of Virginia wherein the proceedings of our society have any influence.

A third recommendation—indeed I may almost call it an earnest entreaty—was, that our town-members should strive to persuade their fellow-townsmen to join our society. If this were a mere gratuity, I certainly should never have been so mean as to ask it in our behalf; but it is clearly demonstrable, that they are far more benefited by our meetings being held in this place, than any equal number of persons in any one or more of the surrounding counties. And yet, although many of them became members at first, they have been withdrawing every year since, until now, we can hardly muster enough of them to form a quorum for business. The admirable precept to "*do as you would be done by*" seems never to have crossed their minds, at least as applicable in any way to our society—although it is probable, that there is scarcely a merchant or mechanic in the place, who does not receive, at each of our anniversary meetings, and in consequence thereof, much more than would pay his annual subscription of two dollars, towards supporting our association. If it be not paid to him directly, it is paid to some one with whom he has business transaction, and thus indirectly increases his chance of being benefited thereby. This interchange of reciprocal benefits seems to be well understood by the good citizens of our city of Richmond, for a large portion of them have become members, and very zealous ones too, of an agricultural and horticultural society lately established among them. And so liberally have they patronized it, that, although it is not yet a year old, it has already commenced operations with such vigor and eclat as to become the theme of universal applause among the numerous visitors who witnessed their late exhibition. And now, my friends, let me ask, is there any good reason, why our society, which is the oldest, I believe, in Virginia, should fall so very far short of a young sister, (so young, indeed, that we may properly say, she is still an infant compared to us,) in our efforts to promote the great—the vital cause of Virginia husbandry? Surely, most surely, we ought to take shame to ourselves for such supineness on our part, and forthwith determine, one and all of us, to make up, if possible, for past neglect, by exerting all the means in our power to make our society an example of efficiency to all that may hereafter be established within our state.

A fourth recommendation which I have pressed upon you several times, was to establish a horticultural society in connexion with our society. The union of the two has been found highly beneficial whenever it has been tried, for we learn

many things in the culture of our gardens relative to the nature and uses of plants, the qualities and best application of manures, the advantages of neat, careful tillage, together with the most profitable methods of managing each variety of garden-crop, that may be very advantageously adopted in our farming operations. But there is a moral view which may be taken of horticultural societies, that gives them a still stronger claim to our regard and encouragement. They furnish to the other sex, who are always ready to aid us in every good word and work, a most innocent, healthy, and delightful out-doors employment; one, which above all others, is well calculated to cure them of those sedentary habits that bring such vast numbers of our Virginia ladies to an early grave. Nothing affords a better, and more exhilarating relaxation from those in-door occupations, which are often wearisome in a very great degree, and not unfrequently painful; all which they endure for our sakes with a degree of patience and fortitude truly exemplary. For this we owe them, not only our constant gratitude, but every effort in our power to render their situations in life, to the full, as comfortable and happy as our own.

You, my friends, can best tell how far I have succeeded in any one of the recommendations just enumerated. My own impression is, that I have utterly failed in all, except in obtaining agricultural reports, and of these, I believe, it may truly be said, that from the establishment of our society to the present day, we have not had as many as it is years old. Were I one of those persons who are apt to despair, even in a good cause, I should long ago (to borrow a nautical phrase) have "*given up the ship*." But I have been otherwise taught. From my earliest recollection it was my good fortune to be instructed by a most affectionate, intelligent and pious mother; and among the many admirable lessons that she labored without ceasing to impress upon my mind, there was one which all the experience of a long life has proved to be universally true. It was, that perseverance, prompted by a sense of duty, and guided by intelligence, is the mighty conqueror of all difficulties, not absolutely invincible, both in the natural and moral world. Hence I have always deemed it our sacred duty never to be so far discouraged in the pursuit of any object which we conscientiously believe to be conducive to the general good, as to relax in our efforts to attain it. If placed in any situation wherein we are expected to advise or persuade others, (and such is the one with which you have so long honored me) we should never be deterred from uttering line upon line, and precept upon precept, in behalf of the cause we have espoused, so long as we could prevail on any to listen to us. I have never yet been without a sufficient number of good men and true in this society, to sustain my hopes in the final success of our cause, and, with Heaven's help, I will persevere to the end of my life, in my efforts to effect my purpose—this is, what it ever has been, to promote, to the utmost extent of my power, the vital cause of husbandry, not only within the limits of our society, but in every part of my good old native state, in which my voice can be heard. Is it not, my friends, a cause of sufficient magnitude and interest to Virginia herself—ay, and to every man, woman and child within her limits, to arouse us all to increased

exertions in its behalf? I am sure you will answer yes. Give me then your aid, give me your hearty co-operation, and we shall soon make the Agricultural Society of Fredericksburg, what every association of the kind ought to be, the prolific source of increasing prosperity to every trade, profession and calling within the sphere of its influence.

Can there be a man who ever reflected a moment on the subject, prepared to deny the verity of this brief eulogium on our profession? If there is, I have never yet met with him. Wherefore then, it may reasonably be asked, does the belief in its truth have so little influence on the great majority of its followers? I will endeavor to tell you why. They are not only ignorant of its inseparable connexion with all the great interests of society, of the direct dependence of some, and the indirect dependence of others of these great interests upon agricultural prosperity, but they follow their profession, not so much from choice, as because their parents have been cultivators of the soil, and have made them so, not only without consulting their inclination or aptitude for such business, but without giving them any preparatory education to fit them for it. The consequence in most of these cases is, either an actual distaste to their profession, or a total apathy in regard to the various means of improving in the knowledge and practice thereof.

Another reason is, that becoming possessors of a worn out soil, (for the fathers of such sons are generally land skimmers,) and knowing nothing of the science of agriculture, they are incapable of so practising the art, as to inspire them with any reasonable hope of renovating their lands in such a manner as soon to render them a source of great and increasing profit. They are utterly incredulous as to the capacity of these exhausted soils for improvement, the only means generally known to them being few in number and small in proportion to the necessity of the case, and therefore such as they deem it hardly worth while to attempt to apply. This produces—first lukewarmness, next despondency, and this is soon followed by an abandonment of their native homes, for new and far distant lands, which they fancy will yield superabundant crops, almost without care or culture. For this evil there is but one remedy, and that, I fear, we shall never learn to apply, (if we ever do,) until a very large portion of our lands are nearly depopulated by emigration. This remedy is—to make our sons scientific as well as practical farmers. They would then very soon learn, not only to have entire confidence in a variety of easily accessible means for improving their farms, of which means they at present know nothing, but they would also become thoroughly convinced, that to lay out whatever money they could spare from necessary expenses in purchasing and applying those means, would be actually to *lend it to their lands*, which would soon pay them a higher and far more certain interest, (often cent. per cent,) than any usurious or gambling process in which they could possibly employ it, even if there was no law either of God or man against such investments. Of this I could give you innumerable proofs, but let these suffice for the present. In an excellent address by John Sanford, esq., President of the Onondaga Agricultural Society, which he was

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so kind as to send me lately, there is the following statement of the capacity for improvement of the lands in that part of New York. He says—“In our state 53 bushels of wheat, 58 of barley, 50 of peas, 132 of oats, 135 of corn, 750 of potatoes, and 5 tons of hay, have been grown per acre. In 1837, I grew, (says he,) 1400 bushels of potatoes on 3 acres, ruta baga 1000, mangel wurzel 1150, carrots 1200, and sugar-beet at the rate of 2100 bushels per acre, making 6000 bushels; and in 1838, I cut 40 tons of clover and herds-grass from 10 acres.” This proof is taken from New York; and now for the two within my own knowledge. The first is, that several years ago, I knew 108 bushels of wheat and a fraction, to be made from only two acres of land, manured from the cow-pens, and this too in the county of Stafford, which is as remarkable for poverty of soil, as almost any in Virginia. And in my own county, I have known 30 bushels of wheat—at the rate of 504 bushels of Irish potatoes per acre, and 75 bushels of corn per acre, to be made from a soil similar to that which was within a hundred yards of it, but unmanured, and which produced barely 15 bushels. Here was an increase of more than fourfold, at no other additional expense than carting out and applying the manure made on the farm, to land which had certainly been cleared more than 70 years. I could state many more cases of still greater products, but deem it needless, as this suffices to prove an increase of more than 4 hundred per cent., which far exceeds any shaving that I have every yet heard of. But instead of pursuing this most obvious way to wealth, such of our farmers as abide by old Virginia, and make any profits from their farms, invest them in more land—much of which lies uncultivated, and of course produces nothing, rather than apply these profits to improve what they already possess. The inevitable consequence of this is, to increase their demand for labor, and the difficulty of employing it profitably over such an increased surface, without any proportionate augmentation of net income. They never seem to reflect—even for a moment, that to *increase* the quantity of their crops merely by cultivating more land, is very often to *decrease* their clear profits; for such crops—when sold and all expenses deducted, rarely, if ever, leave so large a net balance to go to the credit of the farm, as would accrue from the sales of these crops—had they been made—as they easily might have been, from the same farms, before their enlargement, if—instead of adding more acres to them, the purchase money had been judiciously expended in their improvement.

Another reason why so many of our Virginia brethren undervalue their profession and take so little interest in improving it—is, that a vast proportion of us are too much in the habit of charging the short comings of their income to the increasing impoverishment of our lands, although I am inclined to believe that the whole revenue of the people of Virginia, from agricultural products, is greater in proportion to our population than it ever has been. But the truth is, that the disproportion between our expenditures and incomes has been increasing for many years most enormously the wrong way. If the fact could certainly be ascertained, I am perfectly confident that there is scarcely new a man, woman or child,

especially in the old states, whose expenses have not quadrupled in the last 50 or 60 years. But we clap the saddle on the wrong horse. In other words, we blame our lands for not yielding *more*, when we should blame ourselves for not spending *less* of their products in selfish and sensual indulgences. But this kind of arithmetic suits neither our appetites nor our pride, and the poor dumb lands must bear all the reproach, as they cannot speak in their own defence. In former times, within my own memory, 2 or 3 plain family carriages sufficed for a whole county, now there are at least 20 or 30 for one, and at 3 or 4 times their former cost. Our household furniture and house keeping expenses have augmented at the same extravagant ratio, and have nearly extinguished that true, sincere, cordial hospitality for which Virginia was once so justly celebrated, whilst the adornment of our precious persons, not only makes constant and most exhausting drains from the farmers' purses, but occupies much of that invaluable time which was formerly devoted to domestic duties and rural occupations. No wonder, then, that our farmers themselves, together with their wives, sons and daughters, are constantly studying the ways and means of always showing themselves off in a style to surpass that of their neighbors, thereby verifying Dr. Franklin's excellent adage, that "other people's eyes cost us more than our own;" the wonder is that so large a portion of Virginia farms can bear such ceaseless and most exorbitant taxation without utter ruin.

Another obstacle to our improvement in agriculture is, the existence among us of numerous popular errors, which, so long as they last, will certainly prevent the adoption of any new system in opposition to them, however well proved may be its superiority to such as prevailed before. Nothing but a scientific knowledge of agriculture will cure this great and widely spread evil; and the total want of agricultural schools in our country will probably continue it for many years to come. Some mitigation of it, however, might be found in patronizing, far more extensively than we do, the excellent agricultural papers which are now published in almost every state in the union; but which still circulate much less than they ought to do, compared to our political journals—many of which circulate little else but moral poison; the latter, I believe, would be found to exceed them in the proportion of at least thirty for one. The former contains much of the science as well as the practice of agriculture; and if diligently studied would soon correct many of the popular errors which constantly impede our improvement. Among these I will here notice one which probably prevails to a wider extent than any other; and which is a very great obstacle to that kind of improvement supposed to result from a proper rotation of crops. The error in regard to which I will now offer a few remarks is, the very common notion, especially among the despisers of "*book farming*," that rye and oats exhaust land far more than wheat; and, of course, should be excluded as much as possible from every rotation of crops designed to improve our lands; although, generally speaking, these anti-book-farmers have little or no faith in any rotation whatever. Now the truth is, that there is no fact in relation to this matter more indisputably established by a long course of accurate experiments, than that *wheat is more exhausting than either bar-*

*ley, rye, or oats.* For these experiments the agricultural community is indebted to Dr. Von Thaer, whose reputation, both as a scientific and practical agriculturist, is equal to that of any man in Europe. He has gone so far as to form minute tables on this subject, by which it appears, that whilst wheat exhausts the fertility of land in the proportion of 4 per cent. per bushel of product, rye exhausts in that of  $3\frac{1}{4}$ —barley of  $2\frac{1}{4}$ —and oats of only 16-10. Now, since it is reasonable to believe, that all these grains require the same kind of nutrition in the United States as they do in Europe, their exhausting powers must bear very nearly or quite the same proportion to each other *here as there*; and consequently this particular fact is as well decided for our country as for Dr. Von Thaer's, by the experiments just stated. Although I am well aware that my recital of these experiments will make little or no impression on such of our agricultural brethren as know nothing of the chemical analysis of plants, and of the soils in which they grow; and that some of them may even curl up their noses at it—with their characteristic self-conceit, and cry out—"Oh! it's all fudge, we know better;" yet I confidently hope, it will not be the case with all who hear or read what I have said on the subject of popular errors. It will do some good, if it has no other effect than to induce them to examine, more thoroughly, the origin of all their opinions relative to agriculture, since one which has been so long and generally entertained, has been proved to be totally erroneous. Such examination, if made with a sincere and earnest desire to come at the truth, will soon convince them, that for the correctness of many of these opinions, they have nothing whatever which even resembles satisfactory proof, unless it be mere hearsay evidence transmitted from father to son, during an unknown period of time, and adopted without examination. This detection of groundless opinions in themselves will naturally lead them to test the truth of all they adopt, by accurate and repeated experiments, which are the only true and satisfactory proofs of merit or demerit, in all cases of doubt, relative to the various systems and practices in husbandry. And such experiments will certainly contribute more to their own improvement in their profession than any other course they could pursue. Only one caution would be necessary, and that is, never to be extravagant in making them. It is true that their progress would necessarily be gradual, for agricultural experiments, to be of any great advantage, require much time, patience, and care to perfect them. My recommendation, therefore, will not suit that numerous class of our brethren who are always making haste to be rich. Still less will it suit the *land skimmers* of our state, who care not a straw about useful discoveries in agriculture, so long as they can extort from their lands any kind of crop that will bring money into their pockets. When their farms cease to do this, instead of striving to renovate them, as a little care and perseverance certainly would do, these vampires of the soil, who have not a particle of that never-dying love which so powerfully attaches most men to their native homes, forthwith run off in search of other far distant lands, on which they recommence the same skinning, blood-sucking process; destroying, with reckless waste, that natural fertility, which, with only a little

judicious aid, might be preserved to the end of time. From all such cultivators may Heaven speedily deliver our suffering state; not, indeed, by killing them off, but by either converting them into improving farmers, or if that be utterly hopeless, by infecting them with the budge-all-fever, before they quite kill the lands which they now occupy to the exclusion perhaps of those who would take delight in resuscitating their nearly exhausted powers.

It is deeply painful, my long tried and worthy friends, for an old man, like me, who knew our good old mother Virginia, in her most palmy days, when her Washington, and many of his compatriots were living examples of what her children ought to be, now to witness the fast declining love of so many of her sons, for so good and worthy a parent. Unless it can be revived, unless it can be speedily made to glow with all its former ardour and intensity—she, alas! must soon sink to the lowest grade among her sister states, in the midst of which she formerly held the first and highest rank. Why should this be? Her soil has all the capacity for improvement which it ever had—that, thank God, is not yet destroyed, whatever else she may have lost. Her internal resources are even greater than they were ever supposed to be. For many of them have been much developed of late years, which, formerly, were not known to exist; whilst the power of her people to use them beneficially has been considerably increased by education, although that is still far, very far from what it ought to be; especially such education as will best fit an agricultural people for that profession which nature herself has pointed out as the one that a great majority of our population ought to pursue. Why then, let me ask, should any of Virginia's sons desert her? Is she not as worthy as ever of our regard, nay of our warmest affection? Is she not more in need than ever, of the sustaining arms of her children to support her? Both shame and gratitude answer—yes, yes, verily, her claims of every kind upon us are not only undiminished in number, but far stronger in degree than they ever were, and imperatively demand that we should acknowledge them by as great devotion to her service, as our patriotic fore-fathers evinced for her in the darkest days of her revolutionary struggles.

I have reserved for the last—the notice of an obstacle to our improvement in husbandry, which I might, perhaps, as well have refrained from mentioning, since there seems to be hardly the most distant hope left, either of removing it altogether, or of diminishing its power. The cause is the torrent like conversion of that large portion of our female population, chiefly the wives and daughters of our farmers and planters, who once might justly be called, *stay-at-homatives*, into a sort of *nomadic tribe*, or wanderers. Before their conversion, they constituted the very life and soul of every domestic establishment which had any reputation for the abundance of its “creature comforts,” for the cordial hospitality with which they were administered, and for every thing which made home delightful, not only to themselves, but to all the male portion of the family. But since their lamentable change, go where you will—north, south, east, or west, you meet them in countless numbers, many, even with infants in their arms, fleeing to and fro, with the velocity

almost of sky-rockets, and apparently with little more consciousness of the propelling power which is thus incessantly driving them over the face of the earth, and the great waters thereof, in search of something, they often know not what, unless it be to kill their great enemy—*Time*, and to see sights. The mighty agent of this fearful revolution is that gigantic power—*steam*, a power which, among numerous other most marvellous feats, has nearly accomplished that modest wish of two lovers in one of mad Nat. Lee's plays, who besought the gods to “annihilate both time and space.” The instruments used for accomplishing this revolution are steam-boats and rail-road locomotives; and so constantly are they engaged in the service of the new converts from the stay-at-homative class, that should you wish to find any of them, the particular spot which they honor with the name of *home*, is one of the very last places on the face of the earth in which you should look for them, unless in the depth of winter, when the snow and the ice preclude all travelling, either by land or water. The almost inevitable consequence of the prevalence of this absenteeism is, that when the females of the homestead scamper off from it, their fathers and husbands, sons and brothers also must run with them, either from an affectionate regard for their safety, or, because they themselves have become incurably infected with the wandering fever. What follows? why the females abandon all domestic duties, and the men give up their farms during the busiest seasons of the year, to those who have no other interest whatever in them than to use them exclusively for their own special benefit. When the entire exhaustion of the wandering fund compels the proprietors to a reluctant return, they find, generally, that every thing has gone wrong; all their orders have been either totally neglected or executed in such a way as to do more harm than good. This state of things, inevitably creates great disappointment, a few renewals of which suffices to beget much lukewarmness, if not absolute aversion in regard to agricultural occupations. Under such circumstances, improvements in husbandry are things nearly as impracticable as the “extraction of blood from turnips, or sun-beams from cucumbers,” and it is almost folly to hope for any improvements, at least from our wandering farmers, unless they and their families can learn once more to resume the thrifty domestic habits of their ancestors. But this resumption, I fear, will prove infinitely harder on *their* part, than the resumption of specie payments will prove on the part of *our banks*; although the former is still more essential, if that be possible, than the latter, to the permanent prosperity of agriculture.

I might have extended my enumeration of the obstacles to our improvement in husbandry to a much greater length, had time permitted me. And there was one especially, in regard to which I had a strong desire to add something more to what I have often said on former occasions,—I mean the shameful neglect of our legislatures to give any aid to agriculture. But the remedy for this crying evil having been, at all times, in the hands of the people themselves, if they do not choose to exert their curative power, it seems almost presumptuous in the few who see and deeply feel this evil, to utter complaints against the legislative authors of it.



And now, my friends, before I take my leave, I have only to express my regrets, that truth should have compelled me to give you so discouraging a picture of what appears to me to be our present condition and future prospects. But if it has the same effect on *you*, as the thoughts which produced it have had on *myself*, it will only rouse us to greater exertions in our cause, than we have ever yet made. *This cause* is far, very far from being hopeless; nay, the dawn of better things is clearly visible to the mind's eye, in several parts of our state, especially in and around our good city of Richmond, from which ought always to emanate good examples in every branch of productive industry. Even with us, the present effort is very encouraging, if it will but last. Then, let us all determine never, no, "*never to give up the ship*," but return to our respective homes with hearts and voices always ready to join in the animating cry of—onward, onward let us march in united efforts so to improve the agriculture of our good old mother, Virginia, that the exemplary progress of her sons in husbandry may soon become as much the theme of just and universal praise in her days of peace, as were their glorious deeds of patriotism and valor in the time of war.

#### THE QUESTION OF BANK RESUMPTION, OR CONTINUED SUSPENSION.

Addressed to the Members of the Legislature of Virginia.

##### No. 1.—*The operation and effects of the state being a borrower from the banks.*

Notwithstanding that the time fixed by law for the banks to resume payment (or the limit of legal indulgence to their suspension) is so near, and though there are so many apparent indications of an intention to resume, we have scarcely any expectation of its being done. The bank presidents and the other most influential bankites and merchants already pronounce early resumption to be "impossible." The two principal objections to resumption generally urged are, first, that the banks of Virginia cannot resume payment without ruin to the banks and to trade, so long as those of Maryland and Pennsylvania refuse to pay—and 2nd, that the resumption of the banks will force the payment of all debts, to the ruin of the indebted class. Each of those two objections has been met and opposed at length in previous articles of this publication, and it is unnecessary here to repeat our reasons for admitting neither to be true or valid. But there is another objection which has not yet been presented prominently, which we would be much more inclined to acknowledge to be insuperable, and which certainly will render resumption very difficult to the banks, if not "impossible," without being followed by their absolute and avowed stoppage and bankruptcy. This condition is the consequence of the debt incurred by the state at the last session to the banks, of \$360,000, and which it will be proposed to renew and extend, and probably to double, at this session. The fact of lending so much paper to the state last winter was used by the banks as a pretext for renewing their suspension of payments, (which in fact had not ceased

to operate,) and any extension of the loan will be made the implied or understood condition of the legislature's permitting the continuation of the fraudulent suspension for as long a time as the loan shall remain unpaid; so that Virginia will be, like bankrupt Pennsylvania, bound by its legislation, and implied contract, to maintain the continuance of an irredeemable currency. Therefore, those anti-suspension members of the legislature who will vote for any such extension or renewal of the loan, will be in effect voting for continued suspension of payment, and plenary indulgence to bank failures and bank fraud.

But if, after such renewal of the loan, it will be as the bankites will then claim, and as we are inclined to admit, "impossible" for the banks to resume, (safely for the banks,) it will be because they *never will be able*; and that they must break, or cease to operate, whenever compelled to meet their debts and obligations. If so, indeed, (which is not our assertion, but the inference from the bankite arguments,) the unjust indulgence afforded by the legislature merely now prevents the evidence being exhibited, and the bankruptcy being declared, which already exists. For a continued necessity for suspension and inability of a bank to make payment, is a permanent stoppage of payment, or actual bankruptcy. Were we ever so well convinced of this being true, it would only serve as an additional reason for urging the winding up, or suffering to expire, so rotten and incurable a system of irresponsible banking.

If, upon the banks resuming specie payments, *bona fide*, an exhausting and ruinous run were made on them by the holders of more of their notes than they could pay, it could only be the result of the false and fraudulent conduct of banks having destroyed the former general confidence in their truth, honesty, and ultimate solvency. It would be impossible that any other cause than such loss of confidence (and that loss thus caused by their suspension of payment) could bring together at once even one-third of the widely dispersed notes, to be presented for specie. Such large demands can never be made on any bank believed to be solvent, and its notes truly redeemable. Therefore, if such danger be now impending, (independent of further loans being made to the state,) it is owing to the forfeiture of credit and reputation by the banks; and that cause must grow in strength, and power of effect, with the longer continuance of suspension. And it is obvious that if such loss of public confidence would now be sufficient to make resumption dangerous to the banks, every year, or month, added to the delay, will serve greatly to increase that danger. The only means of avoiding it will be—what the leading and most zealous bankites now aim at, but dare not yet to confess—the fixed governmental policy of an irredeemable bank paper currency. Gentlemen legislators! unless you design to go this length, it is perfectly useless to permit a further extension of bank suspension. No further delay, or indulgence, will make the banks better prepared, either in will, in money, or in credit and reputation, to meet the more severe trial at a later time.

It is almost certain that this capital reason for continued suspension will be afforded by the making a new loan (of irredeemable paper) from the banks. The existing debt to the banks is paya-

ble in December; and if paid, there will be no money left in the treasury, by January, and the easy, but ruinous mode of replenishing it, by again borrowing what it costs the banks nothing to furnish, will be doubtless resorted to again, instead of sufficient taxation, or (what would be far better) the selling of bank stock owned by the state. The great objection to borrowing of the banks is that stated above—its being equivalent to a renewed indulgence to the irredeemable paper currency. But independent of that all-important objection, the policy is one of the most absurd, stupid, and injurious to the borrowing commonwealth, that could be devised by the most thorough-going and unscrupulous supporters of a fraudulent banking system.

For the loan made last winter, of \$360,000, the treasury has to pay, at 6 per cent., at the yearly rate of \$21,600 of interest; and the state or people have also to suffer all the loss and damage caused by a year of bank suspension, and depreciated currency, which is very far more than both the principal and interest of the loan. Now let us see what the banks gain, and what they have to pay, by making the loan. Their gain is all the profit of a year's suspension, (if indeed, as they pretended, the making the loan made the suspension necessary,) and that profit is at least equal to all the dividends declared in the year on their whole capital stocks. For if they had truly and honestly resumed payment, there certainly would have been no profits to divide. Now to lend \$360,000 in irredeemable paper, or even as many millions, would obviously cost to non-paying banks *not one cent*, except the bare expense incurred for the paper, printing, signing, and delivering. If the constitutional objection had not forbidden, the legislature might just as well have manufactured and emitted the bills directly, and thereby saved paying the interest, which is almost entirely a gratuitous boon to the banks. And why should the state not have issued so much in paper promises to pay, (either redeemable or irredeemable,) without the useless and costly intervention of the banks? The universal answer will be, "Because a state is forbidden by the federal constitution to issue *bills of credit*." Very true; we readily admit the force and application of the prohibition, and acknowledge its wisdom. But this we maintain—that what a state in this respect cannot do *directly*, and by its own action, it cannot do *indirectly*, through its own agent and creature, a bank. And an emission of paper thus made, as a loan from the banks, besides being a most costly and absurd policy, is just as unconstitutional as an emission of bills directly from the treasury. And rather than this wretchedly stupid and dangerous measure should be repeated, or the last loan continued, we trust that a direct emission from the treasury will be made, so as at least to avoid the enormous cost of interest to the banks, and, what is far worse, the permission of continued bank suspension as a super-added condition.

The making of any permanent loan is altogether opposed to the principles of sound banking. And if the banks of Virginia were *bona fide* paying specie, and had not lost reputation by their prior and long-continued refusal to pay, it would be not only contrary to sound banking principles, but also dangerous to their standing,

to lend a large amount to the state, or to any other borrowers, on long time. If *not paying specie*, and not intending to pay it, of course the banks could lend millions in irredeemable paper, as easily and cheaply as they now violate all other obligations. But our supposed case is of banks paying specie, or truly designing soon to pay. In this case it is obvious that every permanent loan, made in paper, increases just so much the liabilities of the bank, or claims on it for specie; and as the loan is not returned speedily, or at the will of the bank, or at any fixed time, the debtor furnishes to the bank no resource for complying with the increased demand for specie. It is certain that the Virginia banks have not lessened their loans to individuals because of the loans to the state—nor will they do so. Therefore, the banks having lent \$360,000 to the state, has created just so much the more of paper demands for payment, and of lessened ability to meet resumption, unless, indeed, the unlooked for and supposed "impossible" case should occur, of the state debt being promptly paid, and no other incurred to the banks. In the following article that contingency will be considered, and suggestions submitted of means for that and other ends.

#### THE QUESTION OF BANK RESUMPTION, OR CONTINUED SUSPENSION.

##### No. 2. *Plan for supplying the deficiency of the state treasury, without renewed loans or increased taxation.*

At the last session of your honorable body, the contingency of an empty treasury was in certain prospect. There had not been before, and was not then, a majority daring enough, and ready to risk their popularity thereby, to raise the taxes sufficiently; and still less was it thought of to use for the purpose the bank stock of the state, though the entire and known loss of it would be an absolute and great gain to the commonwealth. The resort was to a loan from the banks, as stated in the preceding article. The resort suited the members who are too timid to impose even the most necessary taxation; and it still better suited the concealed views of all advocates of the longest continuation of bank suspension. With the combined support of these two classes, aided by all the out-of-doors bank influence, it is no wonder that the borrowing from the banks, abominable as was its policy in every aspect, met with no serious opposition. The loan fixed and made legitimate the continued bank suspension of payments; and the bankites were sure that the same means would be as much needed, and be even more ready, at each succeeding session, to maintain suspension. It will be for the present legislature to give certainly to, or to crush these expectations.

Wherever increased taxation is really needed for the current support of government, or the performance of prior obligations, we will always be among the most forward of the advocates for heavier taxes. And such would have been our position last session, and would be this, in preference to borrowing from any quarter, if we deemed the necessity for either to exist. But there was not, and is not, any such necessity, and will not be, so long as the state is a bank stockholder, and

partner to the banks. Our proposed plan is to dissolve the partnership between bank and state, and withdraw the state investment, or otherwise gradually to sell off all the bank stocks held by the commonwealth. By these means all present necessities of the treasury would be provided for, all debts and obligations discharged, and the still greater benefit produced, of a release from the controlling influence of a fraudulent banking system, and banking and borrowing interest, which release alone would be well worth the absolute sacrifice of all the state's share in the partnership. Therefore we would earnestly urge on all of our legislators who are opposed to the continuation of fraudulent banking, and of bank government, to resort to increased taxation rather than to loans; but to permit neither, if they can have power to compel the sale of stocks.

That the banks and all their partizans should be in the highest degree hostile to any such plan is of course to be expected. And their opposition would be properly applied. For, when the partnership between the state and the banks is once dissolved, there would be no longer any hope for, or possibility of, the legislative permission to fraudulent and pillaging banking operations. Therefore, all true and thorough bankites would oppose the first steps towards a sale of the state's stock, as vehemently as they would a return to reduced, responsible, honest, and therefore *profitless* banking operations. With such persons we do not pretend to argue, as a change of their course would be utterly hopeless. We address those who are truly opposed to the evils of the banking system, and who are indeed disposed to correct, or control them.

We now write, of course, in advance of the exposition of the financial condition of the commonwealth, which will soon be presented to the legislature. Nor have we lately consulted any past reports, nor do we profess any particular knowledge of the various sources of income, and of the amount of obligations of the treasury. But whether the balance of capital (in stocks) over the whole indebtedness to the banks be great or small, the principle is the same, and the object proposed is alike desirable. If the balance would be heavy, it is important to secure it, and to use it to pay the state's debts and current expenses. If, on the contrary, the balance be small, it is so much the more necessary to get rid of so much legislative difficulty, and the expense of the entire management, when the state's net interest is inconsiderable and of little value. And if the state's net balance of value should amount to *nothing*, (as it doubtless will be hereafter, if the present partnership and borrowing system is continued,) then the state will bear all the enormous cost of management, and all the evil influences of the connexion with banks, for no gain or source of revenue whatever. Therefore, no matter what may be the present state of the balance sheet, the sooner the state stocks and interest are disposed of, the better for the state and the people.

If this plan were advocated with any prospect of successful execution, it would be opposed by the assertion that to put the state stock into market would reduce the price greatly below its real value. If gradually done, we do not believe that such would be the case; though some reduc-

tion might take place, and that without bringing the price below the real value. But the object might be best effected by simply dissolving the banking partnership between the state and the other stockholders, and withdrawing the state's share of the capital, leave the other stockholders to be the sole owners and the sole managers of the banks. The right to do this is unquestionable, and upon two different grounds—either by the preponderating vote of the state in the general meeting of stockholders, or by the right reserved by the legislature, at each restoration of the violated and forfeited bank charters, to amend or modify them thereafter at pleasure.

Another important incidental effect might be produced by this course, serving to remove the greatest *alleged* obstacles to bank resumption. The well secured debts due by individuals to the banks, which cannot be conveniently discharged soon, might be transferred to the state, as part of its share in the division of the stock in trade; and thus the pressure upon solvent debtors, which must necessarily accompany bank resumption, no matter how long deferred, would be greatly lightened, and perhaps made as easy as any indulgence to suspended banks could possibly effect. We have formerly presented reasons for believing that the actual distress to be thus produced, even if without any mitigation and relief, would be small, compared to the exaggerated predictions of the bankites, used to operate on the ignorance and the fears of the debtor class in general.

#### THE TRUE AND THE FALSE REASONS FOR BANK SUSPENSION.

(To the Editor of the Bank Reformer.)

*Dear sir* :—In return for the numbers of your Bank Reformer, with which I have been favored, permit me to contribute my mite towards the accomplishment of the very praise-worthy object that you have in view: a compulsory return of the banks of Virginia to specie payments. I say a compulsory return, because it is but too evident, that nothing short of legislative coercion, or *rather an intermission of legislative wrong*, will drive these baleful institutions into a compliance with their engagements. For no man, or body of men, will ever want a pretext for consulting their inclinations or their interests. And, according to Franklin, it is an excellent thing to be *reasonable* creatures, that we may find out *reasons* to justify what we are determined to do—or not to do.

Now of all the shallow pretences put forth when thus pre-resolved, none can be more shallow than the allegation, that the Virginia banks, being debtors, cannot resume, because the northern banks, their creditors, have suspended. Were the case reversed, something might be said, but it is, I believe, a new thing under the sun to contend, that A cannot pay B because B does not choose to pay C, there being no connexion between A and C.

But the *reason* now devised is novel rather in form than in substance. For I well recollect, that when the question arose whether the banks should resume after the suspension consequent upon the late war, the consideration then urged

was, "If we open our vaults we shall lose all our dollars through the agency of the detestable brokers, and it will never do to part with our dollars to such miscreants." "Certainly not," said the legislature of the day; and so the dollars were retained, and the money-changers, as it was thought, foiled.

After the conclusion of the session, I had an opportunity of conversing with one of the members, a man of some eminence at the bar, and, as he supposed, a political economist of no ordinary grade. "How came you," said I, "to let the banks take you in so finely?" "Take us in! how, sir?" "Why they declared their readiness to resume specie payments, provided only they could retain their dollars. For what reason then did you not take them at their word, and say, 'Keep your vaults hermetically sealed if you please, but reduce exchange forthwith to par, so that every man shall receive his just due in what, for his purposes, is intrinsically as valuable as gold and silver?'" "Oh! that could not be done without reducing the amount of notes in circulation." "Undoubtedly," said I; "but why not have a true plea, or exact the penalty of raising a false issue?"

So at this time, let the banks bring exchange to par between New York and Richmond. Every essential benefit of resumption will then be attained, and the actings and doings of Baltimore and Philadelphia, will be of even less importance to the good people of Virginia than what is now going on in China.

But the moral view of the subject is incalculably the most important. Every where, and in every company, you hear of the multiplication of rogues, and the frightful increase of crime. And what is to be expected from a community where the legislative halls are themselves contaminated? The "chartered libertines" daily enter into engagements expected by both parties to be idle as the wind, so far as literal fulfilment is concerned. And if apprehensive of being pressed by some person possessed of the requisite nerve to comply with a solemn promise, an appeal is unhesitatingly, repeatedly, and, alas! successfully made, to what is called the *liberality* of the legislature. Liberality, forsooth, to authorize the habitual disregard of justice, the constant violation of law, and the total contempt of veracity! As a fitting sequence, trick is then employed to evade the provisions of the federal constitution. An individual cannot, indeed, be directly compelled to accept depreciated, or perhaps worthless paper, in exchange for property parted with in good faith and under the expectation of an honest remuneration. Oh, no! this cannot be accomplished by an enactment to that immediate effect, but the creditor is quietly and civilly told, "such paper or nothing;" and this in contravention of the very object, the enforcement of right, for which civil government was formed, and to the prostration of the most solemn obligations into which man can enter.

Let, then, those who feel some regard, I will not say for the good name of their country, but for its most vulgar interests, let them, I say, commence with the purification of high places. Let the creators of the law be taught that they must conform to the law, and let the enactors of laws recollect, that when the plague spot of

moral obliquity is seen upon the forehead, it but too certainly descends to the members, working final and effectual corruption throughout the body politic. Yours, &c. &c.

#### STATISTICS OF TOBACCO.

In 1708, the yearly exports of tobacco from America for the last ten years were 28,858,666 pounds; of which 11,269,659 pounds were annually consumed in Great Britain, and 17,598,007 pounds in the countries of Europe.

In 1719, the Senate of Strasburg prohibited the culture of tobacco from an apprehension that it would diminish the growing of corn.

In 1724, Pope Benedict XIV revoked the bull of excommunication published by Innocent, because he had acquired the habit of taking snuff.

In 1733, tobacco was made a legal tender in Maryland, at one penny a pound.

In 1747, and the two years previous there was annually exported to England from the American colonies, 40,000,000 pounds of tobacco, 7,000,000 of which was consumed in England. The annual revenue was about \$4,500,000.

In 1753, the King of Portugal farmed out the tobacco trade for about \$2,500,000. The revenue of the King of Spain from tobacco amounts to \$6,330,000.

In 1759, the duties on tobacco in Denmark brought in \$40,000.

In 1770, the Empress of Austria received a revenue from tobacco of \$800,000.

In 1773, the duties on tobacco in the two Sicilies amounted to \$446,000.

In 1775, the annual export of tobacco from the United States, for the last four years, was one million pounds; for the last thirty years it averaged 40,000,000 pounds, of which 7,000,000 were consumed in Great Britain, and 33,000,000 in the other European countries.

In 1780, the King of France received from tobacco a revenue of about \$7,250,000.

In 1782, the annual export of tobacco during the preceding year's war of the Revolution, had been 42,378,504 pounds. Of the total seven years' exportation, 33,974,949 pounds were captured by the British.

In 1787, the quantity imported into Ireland was 1,877,597; in 1829, 4,124,742 pounds.

In 1789, the quantity exported from the United States, together with the two previous years, averaged about 90,000,000 pounds.

In 1820, the quantity of tobacco grown in France had doubled in three years, being 32,887,500 pounds.

In 1828, the revenue of tobacco in the state of Maryland was \$27,275.

In 1830, the revenue on tobacco and snuff in Great Britain was nearly \$12,000,000.

In 1834, the value of tobacco used in the United States, was estimated at \$16,000,000; of which \$9,000,000 were supposed to have been for smoking Spanish cigars; \$6,500,000 for smoking American tobacco and chewing; and \$500,000 for snuff.

In 1838, the annual consumption of tobacco in the United States was estimated at one hundred

millions pounds, valued at \$20,000,000 cost to the consumers—being seven pounds to each individual of the whole population.

In 1840, it was ascertained by a committee appointed to procure and report statistical information on the subject, that about one million five hundred thousand persons were engaged in the manufacture and cultivation of tobacco in the United States; one million of whom were in the States of Virginia, Maryland, Kentucky, and Missouri. Allowing the population of the whole country to be seventeen millions, it will be seen that nearly one-tenth are in some way engaged in the cultivation or manufacture of this article. The value of the export during that year was nearly \$10,000,000.—*Northern Light*.

#### THE BOARD OF AGRICULTURE.

The Board of Agriculture was convened, for the first time, by the governor, at Richmond, on the 6th of December, and on the 12th adjourned to the first Monday in December, 1842.

All the persons chosen by the executive to form the board had accepted their appointments. More than a quorum appeared the first day, and all the members were present on the third day of the session, and thereafter to its close. The members are James M. Garnett and Edmund Ruffin, representing the Tide-water district, James Barbour and Richard Sampson, of the Piedmont district, Edward Watts and Nathaniel Burwell, of the Valley district, and Peter H. Steinbergen and Joseph Johnson, of the Trans-Alleghany district. James Barbour was elected president of the board, and Edmund Ruffin, corresponding secretary.

The proceedings of the board at this first meeting were of course merely preparatory for future action. But as the law establishing the board requires that it shall make a report to the legislature once in each year, it was necessary to make a preliminary report, before adjourning. This report, which will be inserted below, was laid before the legislature on the 6th day of the session of the board, and was referred to a committee and ordered to be printed. These papers will exhibit the designed plan of operations of the board so fully that no further explanation is required in this place, except to add that the various specific resolutions were passed, and orders made, which were necessary for carrying into effect the plan stated generally in the report below.

Every disposition exists on the part of the members of the Board of Agriculture to perform their laborious duties, so far as they may be enabled to act by the aid and favorable coun-

ter and support of both the legislature and agricultural community. *With* such aid, the board can do much for agricultural improvement. *Without* it, nothing can be done, and nothing ought to be expected.—ED. F. R.

#### *Report of the Board of Agriculture to the General Assembly of Virginia.*

*Richmond, 10th December, 1841.*

The Board of Agriculture, established by an act passed at your last session, convened at this place on the 6th of the month, and is now sitting. The members of the board yielded a prompt obedience to the call of the executive appointing them to their present situations, from a long entertained and strong conviction of the benefits which such an institution would confer on our community, if it be conducted judiciously, and with a zeal answering to the magnitude of the interests committed to its care.

Every one whose attention has been turned to the subject must be familiar with the great advantages derived from such establishments in the old world. Great Britain, especially, exemplifies these advantages: long the pioneer in whatever promotes the comfort of mankind, she has, within the last fifty years, which just measures the existence of her Board of Agriculture, increased the productions of her soil a hundred per cent.—an increase owing, by general concurrence there, mainly to the laudable and well-directed exertions of that board in the discharge of its high duties. It is not assuming too much, to promise ourselves the like happy results from the labors of a similar institution, in a field of more auspicious incidents and circumstances. We have abundant material on which to commence our work, and the first purpose of the board is to draw together the vast mass of information connected with husbandry, which lies scattered through the country, and being confined to comparatively a few, is thereby essentially lost to the community. The facts and principles so collected, subjected to the scrutiny and examination of the board, which in theory at least, and it is to be hoped in practice too, will be composed of the most intelligent husbandmen, may be digested into an agricultural code, suited to the moral and physical circumstances of Virginia, and enabling us to avoid the evils which have come from pursuing systems adopted successfully elsewhere, but often inapplicable to our region of country. Such a code, if fortunately prepared, must be of inestimable value, especially to the young farmer just entering on his course; for he is thereby at once put in possession of whatever science and experience have developed in connexion with his calling, and can go confidently on, instead of laboring through life without a guide, as without success, and not unfrequently with the entire failure of all his efforts. The board hopes that the digest may be afforded to the public at a price so low, that every farmer amongst us may be able to possess himself of it. They would illustrate the value of diffusing correct information bearing on agricultural practices, by reference to our great staple tobacco, which a visit to the warehouses will show is selling at from two to twelve dollars; and although other causes

may exert a partial influence in producing this wide difference, it may be safely affirmed that it is chiefly owing to unequal skill and knowledge in the cultivators. Now the average crop of Virginia is 50,000 hogshheads: could these be made of the best quality, by improved cultivation and treatment, a gain of upwards of a million a year to the state might be effected. The same considerations, in a less degree perhaps, are applicable to all our great staples.

It is with unfeigned regret that the board feels itself compelled to draw the attention of the legislature to the condition of the commonwealth, and especially of its eastern portion. Ours is a case unparalleled in the progress of human affairs: a country once fertile, in a most genial climate, with advantages peculiar to ourselves in our numerous and fine navigable streams, and all these blessings under the protection of order and equal laws, becoming depopulated, is a spectacle without its like. Whatever other causes may have contributed to this mournful result, all will readily refer the principal agency therein to an injudicious husbandry. To remove this blighting evil will be the great object of the board. It does not disguise from itself, however, that unaided and alone, its efforts will be unavailing. It must have the constant and cordial co-operation of all classes, and the fostering countenance of the legislature. Agriculture should be the first object of civilized man; its condition is a fair test of the state of society; when it is defective all conditions suffer—when it prospers all partake of its prosperity. Every patriot should esteem it among his first duties to do all in his power for its advancement: the apathy too prevalent every where should cease—a new impulse should be imparted by the zealous friends of agriculture—and the public mind, diverted from an engrossing devotion to party politics, should be made to perceive that this great interest has claims on its attention; for while the bickerings, the rise and fall of heated partizans, and their baneful influence on society shall be forgotten, or be remembered only to be deplored, the achievements of agriculture, by the aid of science and experience, will endure for ever, and in their progress will dispense blessings in all coming time to human kind. The board indulges the hope that its labors will not be altogether unavailing in producing this new direction of sympathies and feelings, so propitious to the success of agriculture.

It will not have been expected by the legislature, because it was impracticable, that the board, at its present convention, should report in detail on the state of agriculture. It has adopted; as is hoped, measures that will enable it to do so at its next session. Among other steps, they have resolved to appoint in each county a committee to be composed of the most successful farmers, (in the selection of whom the board asks the aid of the delegates from the several counties,) to whom inquiries on all branches of husbandry will be addressed; and further, that the members of the board will, as far as practicable, traverse their respective districts, convoking the people to particular points, from the most intelligent of whom much valuable information may be gathered, and calling into action whatever of zeal is to be found in the land. (See documents marked A. and B.)

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The unpleasant, but unavoidable duty devolves on the board, of signifying to the legislature, that an omission, which, unless speedily corrected, may be a fatal one, occurs in the act creating the board. Not a dollar was appropriated to defray even its contingent and inevitable expenses. Patriotism, to the extent of great sacrifices, may be successfully appealed to, in perilous exigencies of the state; but it is a sacred fund, which should be left untouched, to a fit occasion; and to harass it in times of peace, is believed to be as injudicious as certainly it is unjust. It is enough for the citizen to give his time to the public service, without reward; but to require of him, that he should leave his home, travel great distances, and in addition bear his own expenses, is too much. Any undertaking must fail, which rests upon such a basis. The sum requisite to cover the expenses of the members of the board, compensation to the corresponding secretary, with postage and stationary, is small, and utterly insignificant, compared with the benefits which the Board of Agriculture is calculated to dispense. And the legislature may be assured, that every dollar applied to the furtherance of agriculture, will repay its hundred fold. Respectfully submitted,

JAMES BARBOUR, *President.*

#### (A.)

The committee to whom was referred the consideration of a general plan of early operations for the Board of Agriculture, have performed that duty, and beg leave to present the result of their deliberations in the following report:

In considering the different modes of procedure and of operation which might be beneficially adopted by the Board of Agriculture, your committee were bound to have strict regard to the peculiar circumstances of this body, and the entire deficiency of all pecuniary aid from the government for forwarding the great objects of the establishment of this state institution. It was therefore proper to propose for the adoption of the board, not what your committee might deem the best and most surely beneficial plan of operations, but the best that can be availed of in the present feeble condition of the board. It is obvious that the unaided and unsupported efforts of the board alone, or of its few members separately, even if exerted with all possible zeal and energy, can effect very little towards attaining the great objects sought in the institution of this body. Therefore it is especially requisite to appeal to, and ask the gratuitous as well as zealous aid of the judicious practical agriculturists of every county of Virginia. If this appeal to the patriotism and the public spirit of the agricultural class is not made in vain, we may yet hope for highly valuable results from the labors of the board, when thus favored and sustained. The general sketch of a plan of operations which will be submitted, will rest upon the supposition that such aid, from very many of the cultivators of the soil, will be readily and zealously afforded. If without such aid of labor and information, and liberally bestowed, as well as without the fostering care of government, then it may be admitted in advance that any plan and every effort of the board will be utterly futile.

Your committee consider that the great and

most important early business of a Board of Agriculture is to collect the already existing agricultural facts, which, though perhaps long known and properly made use of by a few individuals, or within limited districts, are kept from general knowledge and use, by the want of suitable means for communication and diffusion. If the knowledge of such existing, but almost dormant or concealed truths were merely *exchanged* among the various possessors, and so far made public, that one effect alone would be of very great value to the general interests and improvement of agriculture.

With the view to this end, and by the means hoped for and expected to be furnished in individual labors, it is recommended that a general list of queries, or of particular subjects for inquiry, be prepared, and copies be sent to a few of the farmers of each county who may be supposed likely to be inclined to give their assistance; that these individuals, together with any others invited by them, shall, in each county, form a committee to obtain and report the information desired from that county, as fully as circumstances may permit. In addition to this one service, others of greater value and continued operation might be performed, if the individuals in each county thus associated temporarily for a special purpose, would form themselves, and as many as possible of their fellow farmers, into a permanent agricultural society, constituted for actual *working*—for making and inducing the making of accurate agricultural experiments, and for eliciting and reporting practical facts and useful truths. A society in each county thus constituted, and thus *working*, would in every successive year add to the great harvest of agricultural information, of which our present aim is but to gather the already existing or first fruits. And the total amount of such acquisitions, if furnished from many societies, reported annually to the Board of Agriculture, and then published and disseminated through every county of the state, would serve to produce results of the kind and the value that ought to be expected from a properly constituted and sufficiently endowed Board of Agriculture.

It is proposed that the state be divided into eight districts, in each one of which a designated member of the Board of Agriculture shall endeavor to carry into effect the objects of the board, and as fully as the assistance rendered by others and the other available means may permit. If enough of particular information can be obtained in the course of the ensuing year, and in sufficient time, from any such district, or portion of it, in addition to such general examination and survey as the member of the board superintending that district can make personally, then he shall prepare a general report on the agriculture of the district, or part—and also a more particular and full report of any one county or smaller section, so far as his personal labors and other sources of information may permit. These reports of particular counties, or smaller sections, might in like manner be added to, as to other counties, in subsequent years; and the early and imperfect details of all be connected and enlarged as more matter may be obtained. These reports would serve finally as materials for a systematic and general agricultural report of the whole state.

As additional means for furthering these objects,

it is recommended that each member of the board, when visiting the district assigned to his charge, shall attend the meetings of any existing agricultural societies, or where no society exists, that he shall invite the attendance of, and free conversation with, the farmers of the neighborhood, at suitable time and place, for the purpose of obtaining answers to the queries, and any other desirable information. Each member, thus acting separately, will collect, arrange and furnish to the board the agricultural information offered within his district of operation; and also, from these materials and his own personal investigations, make such general and particular reports as were referred to above.

### (B.)

The committee to whom was referred the selection of queries, have had the subject under consideration, and beg leave to report the following list:

#### I.—*Geographical state.*

1. General geographical description.
2. Climate.
3. Surface and soil.
4. Minerals.
5. Water.

#### II.—*General management of land.*

1. Quantity of arable land, of meadow, of wood, of waste land?
2. Size of farms.
3. Rotation of crops, and the kind of cultivation.
4. Depth and manner of ploughing, for preparation of different crops.
5. Tillage of crops, and general management of each important one, from the seeding to the consumption or marketing.

#### III.—*Products and prices of crops.*

1. Usual produce per acre of different large crops, and general selling price.

#### IV.—*Implements.*

#### V.—*Fencing and enclosing.*

#### VI.—*Tillage of growing crops.*

1. General management, seeding, harvesting, marketing.

#### VII.—*Grass and grazing.*

1. Natural meadows.
2. Watered meadows.
3. Mowing and hay.
4. Artificial grasses, and their comparative value for hay or grazing.

#### VIII.—*Live stock.*

1. Teams, or laboring animals.
2. Animals raised for sale or farm supplies.
3. Prevalent diseases, and their remedies.

#### IX.—*Dairy management.*

#### X.—*Woods and waste land.*

1. Description.
2. Uses and product.

#### XI.—*New or recent processes, or improved practices in agriculture.*

#### XII.—*Obstacles to improvement.*

Including the operation of the laws or governmental regulations.

#### XIII.—*Miscellaneous observations and statements of any thing of interest, not included in any query.*



ESSAY TOWARDS THE ELUCIDATION OF THE  
POPULAR SYNONYMY OF THE GRASSES.

For the Farmers' Register.

The following notes are all that I can at present offer towards fulfilling the promise, made last spring, of doing what I could to clear up the confusion in the popular names of grasses. I expected considerable assistance from those immediately interested in the subject; but, with the exception of Mr. T. S. Pleasants, of Bellond Arsenal, Virginia, I have not received the least aid from that class. I have been obliged therefore to depend principally upon books for information, which will be serviceable as far as it goes, yet must be far from accomplishing all that is desired. I here repeat what I have before urged, that if agriculturists wish to see this project accomplished, they must themselves furnish the principal material; for botanist are too few, and too little acquainted with the popular names of plants in different sections of the country, to be able to furnish much information upon this subject. In the following notes I have drawn pretty largely from a similar article by Dr. Darlington, in the Farmers' Cabinet of October last.

It must be by essays of this sort at the outset, that the materials are to be gathered for the compilation of a Farmers' Botany, if such a thing is ever to be prepared. I judge from some articles in this publication and elsewhere, that such a work was expected from me. But this is more than I dreamed of in the original offer of aid. I am willing however to render such assistance as I can towards it, provided a sufficient amount of popular information can be gathered for making such a work what it ought to be. Without this, it would be but an ordinary Flora. A publication of this sort, however, should not be attempted before the completion of the N. A. Flora of Torrey and Gray, which should be adopted as a standard for the botanical nomenclature.

Let the subject be kept in agitation for a while, and we shall see what can be done towards accomplishing the work. If the editors of agricultural papers in all parts of the country would take an active part in the measure, it would not be long ere it hastened to a conclusion.

1. *Agrostis vulgaris*. *Herds grass* of Pennsylvania, and probably of all the states south of that. *Red top* of New England. *Fine bent grass* of Great Britain.

2. *Andropogon scoparius*. 3. *A. Virginicus*. 4. *A. argenteus*. 5. *A. tehasstachyus*. 6. *A. macromus*. These five species of *Andropogon* are indiscriminately called *sedge*, *broom sedge*, and *broom grass*, in North Carolina. They are common in old fields and are indicative of poor soil.

7. *Andropogon nutans*. *Wood grass*. *Indian grass*, of Pennsylvania. *Beard grass* of Massachusetts. Common in neglected fields, and along the margins of woods. A grass of no value, and not troublesome enough in this section of country to have received a name.

8. *Anthoxanthum odoratum*. *Sweet-scented vernal grass*. A very fragrant grass, and seems to be known by the above name wherever it is cultivated. It is rather common at the north, but Darlington says it is not much esteemed by the farmers. Sir H. Davy represents it as not affording sufficient produce for hay, but says that it

ranks high as a pasture grass in soils adapted to it; such as peat bogs and lands that are deep and moist. At the south, I suspect that it is rare. I have never met with it, except a small patch on the Cape Fear, where it was apparently introduced.

A. 9. *Aristida oligantha*. 10. *A. gracilis*. 11. *dichotoma*. *Hen's nest grass*, *hen grass*, *poverty grass*, of Virginia. These three species are evidently confounded under the above popular names. Mr. T. S. Pleasants sent them all to me as poverty grass, though he at last fixed upon No. 9 as the true one. Mr. Ruffin did not distinguish Nos. 10 and 11, as indeed none but a botanist would be likely to do, so that nothing remains but to apply these popular names to the three species. Mr. Pleasants in a letter says of poverty grass, by which he intends No. 9 particularly, that it covers impoverished fields in the latter part of summer and forms not bad autumnal pastures." Vide Farmers' Register, ix. 613.

12. *Aristida stricta*. *Wire grass* of North Carolina. This grass forms tussocks in the pine barrens of the southern states, putting up numerous straight and stiff convolute leaves, 12 to 18 inches long, and furnishing one of the peculiar features of that sandy region. This grass is quite in keeping with the soil it inhabits, for it is about as arid as the sand from which it grows. After the woods are burned over in the spring, which appears to be the common practice in the lower part of the Carolinas, (to the great annoyance of turpentine makers and fox hunters, as well as to the destruction of much valuable timber,) the young tender shoots are grazed by cattle, as I suppose because they can then find nothing else.

13. *Aristida purpurascens*. Generally confounded with No. 12, with which it grows, but is readily distinguished from that by its flat leaf.

14. *Arundinaria macrosperma*. *Reed*. Too well known throughout the southern states to require further notice.

15. *Arrhenatherum avenaceum*, *Beauv.* *Avena elatior*, *Linn.* *Oat grass*, *grass of the Andes*, of Pennsylvania. *Egyptian oats*, of North Carolina. *Tall oat grass*, and *tiller oat grass*, of Great Britain. This has been cultivated in this state to a little extent, and is esteemed by some, while others disregard it. I have examined a small field of it this month, (November,) which has been twice cut the past season and still exhibits a luxuriant verdure. Dr. Darlington says it is not highly esteemed in Pennsylvania.

16. *Bromus secalinus*. Known throughout the country as *cheat* or *chess*.

17. *Calamagrostis coarctata*. *Wild oats*. So called in the mountains of North Carolina. Not a common grass, and seldom noticed.

18. *Cenchrus tribuloides*. *Sand spur*, of North Carolina. *Bur grass*, *hedgehog grass* of Pennsylvania. Common along the whole coast south of New York, and a great pest in cultivated grounds. It propagates rapidly by taking root at the joints of the stem. Its flowers are a small spiny bur about the size of a pea, and are not easily overlooked or forgotten by the barefooted: Not found far from the sea-coast.

19. *Cynodon dactylon*. *Wire grass* of Virginia. *Cane grass* on the Cape Fear. *Bermuda grass* of Mississippi, Georgia and South Carolina. Sometimes called *Cumberland grass*, ac-

cording to Muhlenberg. This is No. lxxvii of Sinclair's list, in the Appendix to Sir H. Davy's Agricultural Chemistry, and is there called *creeping panic grass*.

Mr. Pleasant says,—"The wire grass has always been considered as affording most excellent herbage, and as a good improver of the soil. When it can be subdued, the land produces fine crops. But the difficulty is in destroying it." For further notice of this grass, vide Farmers' Register, ix. 295, 395, 568.

20. *Cyperus repens*. *Nut grass*, of E. Florida.

21. *C. hydra*. *Nut grass* of North and South Carolina. *Coccol grass*, of Louisiana. These two grasses are excessive nuisances where they get possession of cultivated land, and seem to be the most difficult of all grasses to exterminate. They multiply by numerous tubers on the roots. The first is found from New York to New Orleans, the second is not found north of Virginia, and is much more troublesome in the Carolinas than the other. In E. Florida the first predominates. For remarks upon the extirpation of this pest, vide Farmers' Register, ix. 534. Elliott, in his Botany of South Carolina and Georgia, says that the only effectual method of destroying this plant (*C. hydra*) is by such continued exposure of the tubers by ploughing or hoeing that they at last lose their vitality in repeated failures to take root.

22. *Dactylis glomerata*. *Orchard grass*. Seems to be known in the United States exclusively under this name. In Sinclair's list, it is called *Cock's foot grass*. For remarks upon this, see Farmers' Register, viii. 227, 414, 626. ix. 54, and Sinclair's account in the Appendix to Davy's Agricultural Chemistry.

23. *Digitaria sanguinalis*. *Crab grass* of Pennsylvania, Virginia, and the Carolinas. *Finger grass* of Massachusetts and Pennsylvania.

24. *D. filiformis*. Similar to the preceding and sometimes confounded with it.

25. *Eleusine Indica*. *Goose grass* in Virginia,\* (and North Carolina?) *Crowfoot* in South Carolina. *Wire grass* in Massachusetts. *Dog's tail grass* in Pennsylvania. Muhlenberg calls it *crab grass*, *crop grass* and *yard grass*, but the two first names are commonly appropriated to No. 23. Perhaps these two grasses are sometimes confounded, as there is a similarity in the formation of the flower spikes. Darlington says that cattle and hogs are fond of it.

26. *Elymus Virginicus*. *Wild rye* in North Carolina. A plant rather common and very appropriately named, but neither valuable or troublesome, as I know of.

27. *Eriophorum Virginicum*. *Cotton grass* in North Carolina and Massachusetts. Common in low, grassy and wet lands, and readily distinguished by its head of dirty white floral appendages, somewhat resembling a small mass of cotton.

28. *Holcus lamatus*. *Feather grass*, in North Carolina and Pennsylvania. *White timothy* in Pennsylvania. *Velvet grass* in Massachusetts. Dr.

Muhlenberg calls it *Salem grass*. In England, called *meadow soft grass*, and *Yorkshire grass*.

29. *Leersia oryzoides*. *Rice grass*, of the Carolinas. *Cut grass*, of Virginia, according to Muhlenberg. *Cut grass*, *wild rice*, of Pennsylvania. Has some resemblance to rice, and the margins of the leaves are extremely rough; hence the above names. Darlington calls it "a worthless grass," but a different estimate is formed of it by a writer in Farmers' Register, ix. 167.

30. *Leersia Virginica*. *White grass*, of Virginia, according to Muhlenberg. Very similar to the preceding, but more slender.

31. *Lolium temulentum*. *Spell* of Virginia, for an account of which see Farmers' Register, ix. 569.

32. *L. perenne*. *Rye* or *ray grass* of England and some parts of the United States. For a notice of it, see Farmers' Register, ix., 570. I have never met with these two grasses in North Carolina.

33. *Muhlenbergia diffusa*. *Nimble Will*, of Kentucky, according to Mr. Lewis, in the Kentucky Farmer, vol. iv., no. 27.

34. *Phalaris Americana*. *Spring grass*, at Wilmington, N. C. This is an early, luxuriant grass, growing in the swamps and rice fields along the Cape Fear, and is brought into Wilmington in small bundles in the spring, and sold by the negroes from the rice fields. It would be recognized by any one as near akin to the Canary grass (*Phalaris Canariensis*) which it resembles.

35. *Phleum pratense*. *Timothy*, of the states south of New York. *Herd's grass*, of New York and New England. *Meadow cat's tail grass*, of Great Britain.

36. *Poa pratensis*. *Blue grass*, of Kentucky and North Carolina. *Green sward*, of Virginia. *Green grass*, of Pennsylvania and Maryland. *Spear grass* and *meadow grass*, of Pennsylvania. *Smooth stalked meadow grass*, of Great Britain. For remarks upon this valuable grass, see Farmers' Register, viii., 198, 517, 650, 694, and ix., 54, 115, 516, 518.

37. *P. trivialis*. *Rough stalked meadow grass*, of Great Britain. This resembles number 36, but can be distinguished by its rough stem. It is said to be very valuable, but I do not know of its existence in the southern states.

38. *P. annua*. *May grass*, in some parts of North Carolina. This appears like a reduced form of number 36, and is a fine lawn grass. It seems to be found throughout the United States.

39. *P. compressa*. *Blue grass*, in England, Virginia and Pennsylvania. Called *wire grass* in some places, but not in Virginia or North Carolina. English writers sometimes call it *flat stalked meadow grass*. In Massachusetts I have heard it called *Leghorn grass*, its flat stem adapting it to the manufacture of grass bonnets, for which it has been used. See Farmers' Register, ix., 518.

40. *P. serotina*. This plant I have never met with at the south, though it is common at the north. Dr. Muhlenberg says it is called *red top* in New York, but I suspect only by being confounded with the true red top, or No. 1 of this list. I presume it is the red top described by Mr. Welles of Massachusetts, (Farmers' Register, ix. 129,) under the name of *Poa pratensis*.

41. *Scirpus triquetus*. *Sword grass* on the

\* "Goose grass" is one of the vulgar names applied in Virginia to *Poa pratensis*, described afterwards, and numbered 36.—Ed. F. R.

Cape Fear. Readily distinguished from other rushes by its three cornered stem.

42. *Setaria glauca*. *Wild timothy*, and *bottle brush*, of Virginia. *Foxtail grass*, of Pennsylvania and Massachusetts, very common in waste fields.

43. *Spartina glabra*. *Marsh grass*. An inhabitant of the salt marshes of the whole sea coast.

44. *Tripsacum dactyloides*. *Gama grass*. This grass, as far as I can ascertain, is now deemed a nuisance.

45. *Triticum repens*. *Wheat grass*, and *quake grass*, in Massachusetts. *Couch grass*, and *quitch grass*, in Great Britain. Mr. Pleasant sent me this from Virginia, but without a popular name.

46. *Vilfa Indica*. *Blackseed grass* of the Carolinas. *Wire grass* of Georgia, according to Muhlenberg.

47. *Zizania aquatica*. *Wild rice* in North Carolina, Massachusetts, and along the great northern lakes. *Water oats* in Massachusetts.

48. *Z. miliacea*. *Wild oats* in the lower part of North Carolina.

M. A. CURTIS.

#### WORM IN COTTON.

From the Milledgeville Recorder.

Greene County, Ga. Oct. 8, 1841.

I have made some experiments and discovery of the worm in cotton. I have heard many persons undertake to describe how the worms were generated, but no description seemed to satisfy me. My crop having a great quantity of worm in it this year, I was frequently in it and could see a fly resembling the fly from a silk-worm. It was rather smaller and more yellow. One evening, between sun-set and dark, I followed one of these flies laying its eggs. Every branch of cotton where the fly made a deposit of its eggs, I gathered and put in a glass jar, from which the worm hatched; and while very small I put it into a small cotton square, and it opened in a short time. It passed from one square to another, producing the same effect on the cotton as those in the field where I gathered the eggs.

These worms, after getting to a certain stage of life, leave the cotton bolls and burrow in the ground; but how long they remain in that state, I am unable to say; but beyond all doubt they are transformed into a fly, and this fly lays the eggs; and as soon as the fly deposits all its eggs, it dies similar to the silk-worm fly. How the worm first made its appearance last year, I am unable to determine, but am inclined to the belief that the fly was the original last year, and was brought into existence from some unknown process.

One of these worms will destroy one half of the squares and bolls in a stalk of cotton, and frequently more, before they burrow in the earth. Should this worm remain in the ground during the winter, it no doubt would be a good plan in the dead of winter to break up the bed in which the cotton grew, so that they will freeze. They seldom enter the ground in the middle of the row. The number of worms may be reduced by making lights in different parts of the field just at twilight, at which time the fly commences flying over the

field; and, like all other night flies, will rush to the light and in it. I have caught these flies and pulled them asunder; and I suppose one fly will, from appearance, contain from three to five hundred eggs. I have also caught them when they had but a few, and were small and sickly, and they then soon die. From the fact that the worm destroys so much of the square and boll, I have no doubt that a great saving may be had by worming the plant, and detecting them at all ages and sizes. This plan I adopted, and I am sure from a calculation that I made one day's work, that I must have destroyed from forty to fifty thousand worms in the space of fifteen days. These worms destroy more cotton when small than they do when they are nearly grown, because they mostly prey upon the grown bolls, and frequently they remain in one boll until they get ready to go into the earth.

I will describe the fly as nearly as I can: It is about three-fourths of an inch long, and of a light brown yellow—wings spread out wide, pitched in a leaf, and flies awkwardly when in the act of laying its eggs—has a small green head, and just between the socket of its wings is of a brown red, and has a bill half an inch long, of a hard wiry substance, which it carries in a coil.

I presume some may conclude that stubble or corn land will not be attacked by them; but this makes no difference, as the fly can travel very rapidly and will soon go to any part of the plantation.

Cotton should be planted early, and thinned out to 12 or 14 inches, and one stalk. This will give the cotton air, and it will form its squares at a much earlier age, and is less liable to the ravages of the worm, which appears from the 20th to the last of August. As the worm season is over, I advise the reader to take care of this paper, and judge for himself next crop.

AUGUSTIN GREENE.

#### A CHAPTER ON CATS.

From the Maine Farmer.

There has been considerable excitement within a fortnight in this neighborhood, caused by the appearance of a large animal of the cat species, in Sidney. Messrs. Sumner Dyer, Edward Davis, Zaccheus S. Purrington, and C. Reynolds, being out on a fox hunting excursion, discovered a large track on the light snow, which they thought was made by a *loup cervier* (*louservée*.) They pursued on for a while, when, what should they find in a thicket, but an enormous panther. They were not well equipped for such game, having but two or three balls with them—but they concluded to give him what they had on hand. After a severe battle in which the *vermint* was well "peppered" with balls, shot and slugs, they succeeded in breaking his back, and were thereby enabled to go up and knock him on the head.

He was brought here last week for exhibition, and we were employed to exercise a little "taxidermy" by way of taking off his jacket and stuffing it, *secundum artem*. To be serious, however, we found the animal to be what is generally called a panther. Common consent has applied this name to certain animals of the cat genus, bearing

all the marks and characteristics of that animal, but if writers on natural history are correct in considering or calling the animal found in Mexico, and known there by the name of *jaguar*, a panther, this should be called a *cougar*. He answers very nearly to Harlan's description of the *Felis concolor*, or *American lion*.

We will give Harlan's generic and specific description, and state wherein this animal differs. The following is this description of the cat genus:—

Dental Formula, Teeth 30.	Superior or upper 16 Inferior 14.	Incisor 6, Canine 2; Molar 8, Incisor 6, Canine 2, Molar 6.

Inferior incisors, forming a regular series. Canine very strong. Four molars above, viz.:—two false or conical on each side, one carnivorous, with three lobes and a small tuberculous tooth, wider than long, (the last sometimes wanting,) below on each side, two false compressed, simple molars, and one carnivorous bicusped. Head round, facial line short and slightly arched, zygomatic arches ventricose, jaws short, tongue covered with corneous papillæ, their points directed backwards, nose terminated by a very small muzzle, with the nostrils pierced inferiorly and at the sides, ears short, straight and triangular, pupils contracting sometimes in a vertical line and sometimes in a circle, legs proportionably short, anterior feet pentadactyle (*five toed*) posterior tetradactyle (*four toed*), nails of the fore feet retractile (*drawn in*) in a state of repose, elevated and lying obliquely between the fingers, tail more or less long.

*Habits*.—Very savage, feeding in a state of nature on living animals only, which they seize by surprise and not by chasing as dogs are accustomed to; leaping and climbing with great facility, but running badly, sense of smell not very acute, but that of sight very perfect.

The above is Harlan's description of the cat genus. The dental formula in this is different, or in other words the number of teeth in this fellow is not so great, having only twelve molars or grinders instead of fourteen as above described.

The description of the species of which this animal is probably a variety, is as follows:

*Felis Concolor* (Linnaeus) *Pouma*, of travellers.  
*American Lion*,

Of a deep yellow color, without a mane or tuft at end of the tail.

*Dimension*. Total length, three feet six inches; length of tail, two feet three inches; of the head, seven inches nine lines.

(The animal killed in Sidney is larger.)

*Description*. Body long and slim; head small; legs strong and short; tail long and turning; color grayish about the eyes; hairs within the ears white, slightly tinged with yellow; exterior of the ears blackish; those portions of the lips which support the whiskers black; the remaining portions of the lips, with the throat, white; beneath the neck, pale yellow.

*Note*.—The *cougar de Pennsylvania* (as described and figured in Buffon's Natural History, supplement, vol. 3, plate 2, fig. 41,) is most probably a variety. Collinson remarks, that it is lower upon its legs and has a larger tail than this; it is described as being five feet six inches long;

tail two feet six inches; height before, one foot nine inches; behind, one foot ten inches. *Habit*, carnivorous, ferocious and cruel without necessity; attacking principally sheep, calves, colts, &c.; living isolated or in pairs in the depths of forests; leaping with agility and climbing trees with facility.

Inhabit Paraguay, Brazil, United States as far north as Canada.

So much for the description in "books." The specimen killed in Sidney is undoubtedly a variety of the above species, varying only in some particulars, as animals of the same species sometimes do. It is undoubtedly the animal which our hunters and woodsmen call *painters* and *panthers*, and what is meant when we in this region tell about *catamounts*, and probably what the Penobscot Indians call *Lunkersoons* or *Indian Devil*, so you see he doesn't lack for names.

The specimen before us may be thus described:

<i>Felis Concolor</i> ,	known by the common names of
	<i>Pouma</i> , <i>American Lion</i> , <i>Cougar</i> , <i>Painter</i> , <i>Panther</i> , <i>Catamount</i> , <i>Lunkersoons</i> .

Color, &c. dark or dirty yellow on his head, back, sides and tail: ears blackish on the margin, grayish white within, short tail tipped with black, nose and inside of lips black, upper and under lips grayish white—the part which supports the whiskers black—grayish white around the eyes—throat, belly, inside of legs grayish white. Hair and fur short and very thick or close, eyelids black.

*Teeth*—Three grinders or mashers on each side of under jaw. Three on each side of upper jaw, the front one on each side of this jaw small and conical. Tusks four, two in lower and two in upper jaw, large and stout, incisors or front teeth small; six in lower and six in upper jaw. Tongue rough with sharp papillæ bent backward. The partition between the upper and lower lobe of the brain (cerebrum and cerebellum) composed of thin plate of bone extending down usual distance toward the base.

*Dimensions*. Length from tip of the nose to tip of tail seven feet three inches. From tip of nose to insertion of tail five feet three inches. Height two feet.

Girth or circumference of head half way between ears and eyes, one foot eight inches; ditto of fore leg near the body one foot: ditto of body near the fore legs two feet ten inches; ditto at flanks three feet four inches. Toes on fore feet with a dew claw, on hind feet five. Gland or protuberance above ankle in fore leg bare and black. Weight 200 lbs.

He was a male and very fat; the fruits of good living upon the rabbits and deer of the forest, and occasionally a sheep or two.

It has been conjectured that he escaped from a caravan. There is no necessity for resorting to that to account for his appearance. He probably strayed down from the forests on the frontier, where there are more of them. They are occasionally seen by hunters and lumbermen, but are seldom molested or taken. It takes the Sidney boys to "nab" such kittens.

With the exception of the common domestic cat and the lynx, or *loup cervier*, we have seen no other species of the cat (*felis*) in Maine. We have what are called Fisher cat and black cat, but these are not of the cat genus.

#### TOBACCO A REMEDY FOR ARSENIC.

From Silliman's Journal.

A young lady in New-Hampshire fell into the mistake, so often committed, of eating a portion of arsenic which had been prepared for the destruction of rats. Painful symptoms soon led to the inquiry: and her mistake was discovered. An elderly lady who was present advised that she should be made to vomit as speedily as possible; as she had always felt a perfect loathing for tobacco in every shape, it was supposed that this would at once effect the purpose. A pipe was used, but without producing nausea. She next chewed a large portion of strong tobacco, and swallowed the juice, and that even without a sensation of disgust.

A strong decoction was then made of hot water, of which she drank, perhaps, half a pint. Still there was neither nausea nor dizziness, nor did it operate at all, either as an emetic or cathartic. The painful sensations at her stomach however subsided, and she began to feel well. On the arrival of physicians, an emetic of blue vitriol was administered, and produced one operation. One or two days after there was a discharge of a dark green color, approaching to black. No ill consequences followed.

Another case occurred in the same place a few years subsequently, in which arsenic was taken through mistake, by a sick person, and she employed tobacco with the same success. She, too, had always loathed the article, but now chewed it and swallowed the saliva, without producing sickness to the stomach. No emetic was administered nor any other remedy.

#### OBSERVATIONS ON THE NATURAL HISTORY AND ECONOMY OF THE DIFFERENT INSECTS AFFECTING THE TURNIP CROP.

By John Curtis, F.L.S., etc.

(From the Journal of the Royal Agricultural Society of England.)

Unless we collect facts on good authority, and conduct experiments with care and perseverance, our labor will be lost in studying the economy of the insect tribes; for in the investigation of such living atoms, as they often are, the slightest error may lead us far from the truth. It is not to be expected that a taste for such studies will be universal, though all who can appreciate the value of a good harvest will take, it may fairly be presumed, an interest in our researches. Such a taste, however, where it does exist, is easily improved; and it is a truth admitted by all who have indulged in such pursuits, that they never repented of the time that had been given up to these laudable objects; and independently of the amusement to be derived from the investigation of nature, any benefits conferred on man by such knowledge ought ever to

be a source of real satisfaction, and of honest pride, to every cultivator of natural science, however trifling his contributions may be to the general stock of information.

Unimportant as insects may appear to the casual observer, they often prove awful visitations when employed by the Creator as his armies to fulfil his ends. No one suffers more from these hosts than the agriculturist; it is therefore impossible that he can remain an indifferent spectator whilst it may be in his own power to palliate, if not to avert, the evil. I therefore hope that these memoirs, by calling the attention of the farmer to so important a subject, may lead him to useful and profitable results; and should he derive as much advantage from their perusal as I anticipate of pleasure in their detail, it will prove to me a source of unfeigned gratification.

I am aware that one of the greatest difficulties the farmer has to contend with is, that invariable law of nature which compels him to change his crops, from the exhaustion of certain elementary parts of the soil, which are absorbed or neutralized by the vegetable that is produced; and with all his art in selecting manure and resting the land, it will become tired at last, and by degrees refuse to produce certain crops nearly altogether: it is even asserted of the turnip, that it certainly does not grow so vigorously nor so readily as it did several years ago. It is natural to suppose that as this period approaches, the crops will become, from feebleness, more susceptible of disease; and as insects are intimately connected with this subject, contributing in no small degree to the dissolution of vegetables, and the failure of our crops being frequently very justly attributed to them, this is a matter well deserving of our attention, and in pursuance of this object we will first consider those insects which attack the turnip, a root of the greatest importance to us all; for without turnips our sheep and cattle would be deprived of one great resource, so that we should be almost unable to procure fresh meat in winter, most essential to the health of man: and the land again would lose that fertility which in feeding off the turnip we secure for the succeeding crops.

No crop is subject to the attacks of a greater number of noxious insects, &c., than the turnip. First, the ants run off with an incredible quantity of the seeds; then come two sorts of turnip-fly, the striped and the brassy, which destroy the tender leaves as soon as they burst from the ground; at the same time we have the maggot of a fly and the wire-worm, both living upon the young roots; and also a large caterpillar or grub, when they are more advanced; then follow armies of black caterpillars, reducing the leaves to skeletons, and the blight of the plant-louse, together with a minute moth; we may add also two weevils, which cause the lumps or excrescences on the bulbs; with slugs, snails, and mildew bringing up the rear.

Before entering upon their history, it will be necessary to make a few observations relative to the economy of insects, which I beg may be borne in mind in the perusal of these papers, as they will be of service in the investigations I propose, and in which I hope every practical man will lend me a hand; they will also smooth the road to those who have not a scientific knowledge of insects, and are not skilled in the study of entomology.

Insects have been divided into large masses,

named *orders*; these are subdivided into lesser groups, called *families*, which comprise smaller companies, designated *genera*; and each of these consists of more or fewer *species*, or different sorts, which occasionally vary in size and color, and such are termed *varieties*. Another still more important fact to be remembered is, that all insects progress through several stages: \* *first*, the female lays an egg; this egg hatches and produces, *secondly*, a *larva*, which is a little animal called a maggot or genile, a caterpillar or canker, a worm or grub, &c. Thus we have *maggots* in cheese and meat, called *geniles* by anglers; *caterpillars* on cabbages, *cankers* in roses, *wire-worms* and *silk-worms*, and all sorts of grubs. When any of these have fed until they are full grown, having been compelled to cast their skins several times as they increase in size, they change, *thirdly*, to a *pupa*, *chrysalis*, *aurelia*, or *nymph*: they either enter the earth for this purpose, as most naked maggots do, or, like hairy caterpillars they spin a web, in which they undergo their transformation or change; but the caterpillars of the cabbage, butterfly, and many others, merely suspend themselves to a wall or rail, and there remain unprotected during the winter. In this state they all rest without any symptoms of life, except when touched, until the substance of the enclosed larva has become perfected into the various members of its first parents, when, *fourthly*, out comes a flesh-fly, a butterfly, a rose-moth, a click-beetle, a turnip-fly, &c.; and this is called the *imago*, or perfect state.

The turnip-beetle, with whose history we will begin, belongs to the order *coleoptera*, from its wings, with which it flies, being folded beneath two horny cases. It is included in the family *chrysomelidae*, or golden beetles, for certain scientific reasons, in conformity with its structure, and is one of about one hundred species, forming the genus *altica*, sometimes written *haltica*.

The striped turnip-beetle, or, as it has been called, the turnip-fly, turnip-flea, earth flea-beetle, black-jack, &c., is named in our catalogues *altica nemorum*.† The former word, derived from the Greek, alludes to the leaping powers of the genus, and the latter signifying that this species inhabits woods and groves, which were more especially its haunts before the cultivation of the turnip became general.

The economy of this little pest has puzzled the man of science, as well as the practical agriculturist, for many years; and for want of that rigid care which is indispensable in the investigation of natural history, numerous errors have been adopted, which have led to the promulgation of many false theories. Dr. Pearson believed at first that the white spots or dots observable on more than half the turnip-seeds were the eggs of the turnip-fly; but he was compelled to abandon that opinion, "having had no flies where the seed was sown in soil contained in pots covered with bell-glasses." "Rusticus," however, a contributor to the *Entomological Magazine*, ‡ so strongly insisted upon it,

\* Plant-lice often bring forth young instead of laying eggs, so do blue-bottle flies, but not always; and there are a few other exceptions.

† Vide Curtis's Guide to an Arrangement of British Insects, second edit., col. 74.

‡ Entomological Magazine, vol. i. p. 363.

that seed steeped in brine, or otherwise prepared, have been sold in London at the seed-shops, to insure the grower against the attacks of the fly. It is exceedingly likely that the white dots are occasioned by minute flies alighting upon the seeds while they are drying, and depositing their excrement upon them, which is often white; or they may be particles of pollen from the flowers. It was, however, from the careful investigations of Mr. H. Le Keux\* that we were first made acquainted with the actual economy of this little beetle.

If the spring be warm the sexes pair from April to September, during which period the eggs are deposited by the female on the underside of the rough leaves of the turnips. She lays apparently about one egg daily; and ten pairs laid in a week only forty-three eggs. This indeed was under confinement; but the correctness of this estimate is supported by the fact, that in leaves taken from the field, containing as many as six larvæ, they were all of different sizes, indicating a variety of ages. The eggs are very minute, oval, smooth, and partaking of the color of the leaf. They are hatched in ten days; and the little maggots immediately begin to eat through the lower skin of the leaf, and to form winding burrows by feeding on the pulp. These burrows are visible enough to the naked eye when the larvæ leaves them, and the cuticles are withered and discolored; but in their early stage they are discovered with difficulty: indeed it is only by holding the leaf up to the light that they can be well detected.

The larvæ are pale, fleshy, and cylindrical, with six pectoral feet, and a proleg at the apex: the head is furnished with jaws and large dark eyes; and the first and last segments bear dark patches. They are full fed in about sixteen days, when they desert their burrows and bury themselves not quite two inches below the surface of the earth, selecting a spot near the bulb, where the turnip-leaves protect them from the wet and drought.

In the earth they become immoveable *chrysalides* which are brought to maturity, I believe, in about a fortnight, when the beetle or fly, as it is called, emerges from its tomb, again to fulfil the laws of nature.

The beetles are shining black, minutely punctured; the head is rather small, with two prominent orbicular eyes, finely granulated; the mouth projects a little, the upper lip and feelers being visible: just above the nose are placed two longish horns, each composed of eleven joints, the three next the head ochre-colored, the first being the longest, the remainder dull black, the terminal one pointed: the thorax, or trunk, is broader than the head, narrowed a little before, with the sides rounded: the two wing-cases are moveable, and form an oval; they are twice as broad as the trunk, and four times as long; each has a distinct ochre-colored stripe, sometimes approaching to white, running down the centre, generally winding a little on the outside, near the middle, and curved inward at the extremity: beneath are ample wings, twice as long as the body, and folded up for protection when unemployed: the legs are of a rusty ochre, the thighs pitch-colored, the hinder being very

\* Transactions of the Entomological Society of London, vol. ii. p. 24.

thick and formed for leaping; their tibiae, or shanks, are also the stoutest, and thickly fringed on the outside towards the end: the feet are all composed of four joints, the tips as well as those of the shanks generally pitch-colored; in the hinder pair the basal joint is considerably the longest; the third is formed of two slightly dilated lobes, roughened beneath with fine hairs, as well as the two preceding joints, for the sake of adhering to smooth surfaces, and they are thus enabled to ascend glass; the fourth joint is slender and club-shaped, and always furnished with two minute claws.

The mouth is composed of six parts; the upper lip or *labrum*, is large, broader than long, and a little narrowed before; the anterior margin is slightly concave, and furnished with two short bristles. The *mandibles*, or teeth, form two sets, one placed on each side, so as to meet; they are strong, bony, and semilunate; one terminated by three, the other by four sharp strong teeth; the second being the longest, the lower one smallest. The *maxilla*, or jaws, are two, placed on each side, beneath the teeth: they are small, terminating in two lobes, densely fringed with fine hairs at the apex; the inner lobe the largest, somewhat orbicular; the outer one smaller, being an articulated, somewhat ovate lobe: on the outside of each jaw is attached a moderately long and stout feeler or *palpus*, composed of four joints: the basal joint is clavate, the second is obovate and truncated, the third is much stouter and similar in form; the fourth is the longest, stout and conical, being somewhat pear-shaped. The *mentum*, or chin, is somewhat quadrate, the sides are convex, with the anterior angles acuminate: the *labium*, or under lip, is somewhat quadrate, horny and truncated at the base, with a leathery oval lobe in front; the sides are excavated to receive another pair of small feelers, or *pilpi*; these are very short, stout, and composed of three joints only; the basal joint is cup shaped and scarcely visible; the second stout and oval; and the third is very slender, with the apex pointed.

The length of the beetle varies from  $\frac{3}{4}$  to  $1\frac{1}{2}$  of a line; the line being the twelfth part of an inch: the longer ones are the females, which are considerably stouter than the males, and this is especially the case after impregnation.

When the beetle is feeding, the different parts of the mouth are all employed: the upper and under lips open to liberate the other organs; the two sets of teeth, or the toothed mandibles, as they are named, meet when closed, and from their strength and horizontal action they readily break the cuticle of the leaf. Indeed, some that I put into a quill soon reduced the inside of the cork stopper to powder. The jaws seem to be adapted for keeping in the food during the short process of mastication, and the four feelers hold and steady any portion of the leaf to be eaten, and assist in conducting the detached morsels into the mouth.

From the experiments so successfully conducted by Mr. Le Keux, it appears that the female beetle lays but few eggs compared with most other insects, and that it requires a period of about thirty days to carry the animal through its various stages up to the time when it becomes a perfect beetle again, viz., it remains an egg ten days, a maggot six, and a chrysalis fourteen days: the beetles themselves are rather long-lived, for they

have been kept in that state from July until the following February.

The turnip-beetle, and all the species of *altica* related to it, are readily known by the great thickness of their hinder thighs, which gives them the power of leaping, like fleas, to a prodigious distance, considering their small size. Eighteen inches is about the greatest extent of their leap, which in a straight line would be, averaging their stature, 216 times their own length: and when it is remembered that this leap is performed in a curved line, it must be admitted that a considerably greater distance is achieved. They seldom walk, and when at rest sit with their hind legs folded under them, ready to skip off in an instant, if disturbed, or when even approached: in warm weather, during sunshine, with the thermometer standing between 70° and 80° in the shade, they fly with facility.

This little plague is not confined to our island, for it is abundant in Germany, and common every where in Sweden, where it is very destructive in its perfect state. Probably in England no portion of the country is perfectly free from these insects, at least every bank and meadow harbors them to a greater or less extent, and they have been found also on grass lands which had not been ploughed for many years, and where there were no turnips within half a mile. It will be necessary to consider this part of their history before we enter upon a discussion of the remedies. The turnip-beetles hibernate, or live through the winter, in a torpid state, and may be found under the bark of trees, as well as beneath the fallen leaves, in the chinks of old timber and paling, the stumps of thorns and of other bushes, where the bark does not adhere close to the stem, and the hollow stalks of grass and stubble seem to afford them an asylum during the inclement months of winter; but inactive as they then are, the warmth of the hand is sufficient to revive them in a few minutes, so that an unusually mild day in January or March will partially seduce them from their retreats, and will render them almost as active as would the ardent sun of summer.

On the first indication of spring, if the weather prove fine, warmed by the sun and cheered by his rays, they arouse from their slumbers, and permanently leave their winter quarters for sunny situations, where they may be seen sitting on walls in considerable numbers, or sunning themselves on dry banks and on clods of earth, protected from the wind; they have been observed in gardens on turnips and cabbage-plants as early as March, and in April on the crops in the fields, but May and June appear to be the more usual periods of their first and most fatal attacks. The autumnal crops have been occasionally destroyed by them,\* and in one instance I have seen recorded, as late as the middle of September. They may be said to be abundant from May to October amongst the grass, and in all fields, whether of wheat, oats, or barley: a friend of mine observed myriads on turnips in Surrey, on the 2nd of September, but they all disappeared in two or three days; and both sexes were common on the white turnips in Dorsetshire last October.

\* In 1826 a crop was destroyed at Knutsford after the 21st of August.



It seems that the taste of the turnip-beetle is far less fastidious than is generally imagined. This might be fairly inferred from its abounding in situations where the turnip does not grow; there can be little doubt, however, that it prefers those plants which are termed cruciferous, from the shape of their flowers, of which cabbages and turnips are examples; of these the leaves of the horse-radish, the common turnip, and the radish, are its favorite food, but cabbages, cauliflowers, colewort, water-cresses, ladies'-smocks, and hedge mustard, called jack-by-the-hedge, are often attacked; the charlock or wild mustard is also sometimes covered with them at the end of April, and in May the leaves will be seen pierced with holes, but as soon as the turnips come up they desert other allied plants. Mr. Berry has recorded a remarkable exception, for he says that after consuming the cabbage plants, the flies \* attacked and destroyed the young hops, which belong to a very different tribe of plants. Kollar also states that both summer and winter turnips left for seed suffer in warm and dry weather, from the attacks of the fly injuring the flowers, so as to spoil the produce of the seed.

The next subject to be considered is a remedy against the attacks of the turnip beetle, which in some years must cause losses amounting to an enormous sum of money, for so long back as 1786 Mr. Young stated that the turnip crop destroyed in Devonshire alone was valued at 100,000*l*. Now, with regard to the eggs, we see that they are laid on the *under side of the rough leaf*, where they are pretty well secured from rain, and also protected by the strong and projecting ribs that support the leaf from any injury that might occur from the leaves being ruffled by the wind or other casualties; and the inferior skin being the most delicate, is best adapted for the entry of the infant and tender maggots into the substance of the leaf. It is not, therefore, at this stage that much could be done in destroying them.

The maggots, it is evident, live upon the *rough leaf*, and do little or no mischief to the growth of the plants; they dwell perfectly secure between the two cuticles, unless it be when they leave the burrows they had first commenced, probably not of common occurrence, to form new ones at a remote part of the same or upon another leaf. At this period they are most probably affected by parasitic enemies.

The *chrysalis* is buried only just beneath the surface of the earth, but it is probably protected in a slight web, forming a cradle for it to lie in free from pressure. I think some efforts might be successfully made for its destruction at this time.

It is, however, in its last and perfect state that the mischief is done. It is the beetle which destroys the two first *smooth leaves*, called the *cotyledons*, and the heart of the plant between them, by piercing them like a sieve, destroying the cellular tissue and stopping the growth of the plant. They also feed upon the rough leaves, drilling them full of round holes, which are larger on the upper than the under side of the leaf; and if the appetite of the beetle be not satisfied, he enlarges the aperture, and thus gives it an irregular form, which dilates with the growth of the leaf: hence

the large holes we see at a later period. After all, it is at this stage of their existence, I am inclined to believe, that we can attack them with the best prospect of success, if they cannot be kept off by other means.

In collecting the turnip-beetles by sweeping and various methods, large numbers of small carnivorous beetles, belonging to the *Carabidae* and *Staphylinidae*,\* are found with them; these probably feed upon the larvæ; but from the very recent discovery of the early stages of the turnip-beetle, we are yet ignorant of the *parasites*, of which it may be presumed there are more than one species, that prey upon the maggots and chrysalides; for it is a wise dispensation of Providence to keep every animal in check by some other that is either more powerful or more sagacious than itself, and this counteracting effect is produced in a degree equal, or eventually superior, to the noxious animal, so that in a greater or less space of time the destructive power may be rendered no longer formidable, or be absolutely annihilated by the attacks of its parasites. This natural process, though never failing, is often too slow in its operation to secure immediate relief; the farmer must, therefore, devise means, if possible, for the more speedy destruction of the enemy.

The beetles are seldom found in shady places, except during the winter season, and they cannot bear cold and wet, which are great protections against their increase; it consequently follows that warmth and sunshine are far more favorable to their multiplication, and in such seasons they are most to be dreaded. Showery weather, after a long drought, and cloudy days with gleams of sunshine, also render them abundant,† as such seasons do the greater portion of insects, but, in a few instances, they have been known to do much mischief even in cold weather.

That the turnip-beetle is endowed with an acute and powerful sense of smelling, is proved by his flying against the wind, and deserting all other plants as soon as a turnip-crop appears in his neighborhood. Mr. Le Keux says that in May, 1836, when the thermometer was 75° in the shade, during a *south wind*, great numbers were on the wing, and all proceeding *southward*; and again, that eight acres, forming the summit of a hill in Devonshire, were sown with turnips, and when the young plants were just rising above the ground, the wind being for more than a week at south-east, wafting the scent to the north-west, they were so destroyed on this side, that nearly an acre was bare, whilst the south-east side was not touched, until the plants had attained a size to render the attacks of the beetle of little consequence.

From what has been stated, it appears that no season will secure us entirely against the attacks of the turnip-beetle, and that no soil is considered safe from them is evident upon the best testimony; it is very destructive upon strong lands; and not less so on light ones. Neither is the period of their attack limited, for as one pair of insects may produce five or six broods in a season, there is a constant succession, which renders any plan for

\* Curtis' British Entomology folios 446, 758, &c.

\* Might not these have been the *Altica concinna*, or some allied species?

† A field of turnips is stated to have been destroyed by the fly in a few hours before a thunder-storm at Rockingham.

extirpating the beetle in any of its three early stages scarcely practicable. As the turnip when in rough leaf is not in any danger from the attacks of the beetle, it is evident that our first care must be to preserve the young plant, and this can only be done by the preparation of the soil, or using such speedy means, the instant the beetles appear, as will destroy or drive them away. The primary object will be to discover the best manure for that purpose and a dressing that will render if possible the soil obnoxious to the insect.

It has been correctly said, "that the manure which most effectually promotes the growth of the plant will be the best defence from the insect; and that when the growth is slowest, the danger from the insect is most serious." This arises in a great measure from the advantage that insects have over vegetation; a gleam of sunshine is almost sufficient to call them into active life, as we have before observed, and as is evident from the swarms of delicate gnats that may often be seen dancing in the air when frost is on the ground, even in January; but it requires the accumulated rays of the sun, and a much longer duration of warmth, to set in action the fluids of plants.

It will not be irrelevant to the subject to take a cursory view of the recommendations suggested by various eminent agriculturists; and as the results derived from some of their experiments have been greatly at variance, I may venture occasionally to offer an opinion; but as it is not strictly within my province to *determine* such practical points of difference, I can only hope that they may be encouraged to prosecute their valuable researches until such variations are satisfactorily explained.

Whether any *direct* protection against the beetle can be expected from manure, since it is ascertained that it is not upon the seeds that the eggs are laid, now becomes a question; for when the maggots escape from their burrows in the leaves, and enter the earth, in order to become chrysalides, before changing to beetles, the manure, I should think, seldom contains sufficient ammonia to destroy them, and, if I mistake not, any moderate fermentation would rather facilitate than retard their metamorphoses; moreover the instinct of insects is so perfect, that the maggot would most assuredly avoid obnoxious spots, so that, if any manure were spread that would injure them, unless it formed a very uniform stratum, it would not ensure success, although great advantage might be derived from its use.

Burning has been found the best preventive against the beetle by some, which is readily accounted for, since it would destroy any chrysalides in the land, and as the beetles may be in abundance in the field when it is preparing for turnips, burning would, of course, be destructive to them, and spreading the ashes afterwards over the ground will prove an additional security; but such a system does not suit sandy soils, neither can it be followed up regularly on any land.

Feeding off the turnips is strongly recommended as an antidote to the beetle, as well as from its peculiar advantages of manuring and preparing the land for the barley crop and succeeding seeds. I am disposed to attribute the advantages derived from sheep-folding, as regards the beetle, to the perfect stamping down of the soil and herbage, by which all insect life is destroyed, rather than to

any peculiar quality in sheep manure, unless it be contained in their urine.

However Mr. Sufton's "plan of preparing the fallows for the seed, and leaving the land for ten days or a fortnight before sowing," may have answered occasionally, as his hypothesis is not correct, we must look to other causes for his success, and this is probably the exposure of the chrysalides to drought and change of temperature, which would naturally destroy them; the opportunity the weeds have of growing up and overpowering the crop seems to be a fatal objection to this process. I quite coincide, however, with Mr. Cowdry, that the destruction of the beetle may be greatly facilitated by the mode of ploughing he suggests, for if the chrysalides be deeply buried under the furrow, they will perish for want of sufficient sun and moisture to bring forth the little beetles, or even if they hatched, they would not be able to extricate themselves from the earth heaped upon them; this is taking it for granted that the chrysalides are in the soil, which would depend upon the character of the preceding crop. And here again we require information, for if the maggot of the turnip-beetle will live in the leaves of clover and other artificial grasses, then such a process as deep ploughing becomes an effective remedy; if not, it would only be useful where the first crop had failed from the land being infested with the turnip-beetles.

If the turnip-beetle were not common everywhere in Sweden it might be presumed that northern latitudes were uncongenial to its habits, for it did not appear to be known in Scotland until 1826, and it has done but little mischief, I believe, since; but this is attributed by Dr. Fleming and others to the turnips being drilled in; indeed, broadcast is generally considered inferior to drilling, and the system of ridging for the drill is recommended by most farmers. Cold and wet we know do not agree with the perfect insect, and such seasons may be still more pernicious to it in its earlier states, which may account for its rarity in Scotland, where I do not remember to have noticed it; and in part of Forfarshire and in East Lothian the fly is said to be scarcely known. Mr. Bowie, however, of Arbroath, seems to be well acquainted with the effects of the fly, although he only remembered its attacking the plants once in rough leaf, and that was during the hot and dry summer of 1826. I see also that at Cramond, near Edinburgh, it is now abundant. No notice has been taken of it in Scotland, except on the eastern side, where it may be expected, as in the eastern counties of England, that the fly would be most fatal to the crops, as there is a much less fall of rain on that side than in the western and south-western quarters of the kingdom; we see, however, from the destruction recorded in Devonshire, that in a warm district, although subject to a great deal of wet, its progress is not always impeded.

It is the opinion of a great many agriculturists, that raw and long manure harbors the beetle, and if turnips be sown on a stubble-crop, they are often completely destroyed. I see Mr. Webb Hall states that he has had to sow stubble-crops three times over, and seed sown on stubble late in August has been taken off by the beetle in more than one instance. Whether this arises from the hollow straws affording a retreat for the beetles, or that the weeds had supported them or the mag-

gots, so that the chrysalides were lying undisturbed in the land, is not easily explained.

Mr. Linton and many others recommended drilling in not less than three or even four pounds of seed to the acre, and six or seven pounds broadcast; for he very justly observes that thick sowing causes the plants to grow much more rapidly when young than thin sowing; and by drilling in with the seed a peculiar compost, containing the strongest animal manures, the fly, he says, has never yet disappointed him of obtaining a good crop. I think it probable that the ammonia in this potent manure may be disagreeable, if not destructive, to the insect; and the rapid growth of the plant, from its stimulating effects, defies their attacks. The vegetation of the seed may be accelerated by steeping it in water for twenty-four hours; and the surest way to obtain a strong crop is to sow seed of the same age, otherwise the plants do not come up simultaneously, and the fly will attack and destroy the crop in detail.

Mr. Linton also adds that he has found more benefit from the manure he describes in the succeeding crops of clover-seeds than from three or four chaldrons of lime to the acre. With regard to the use of lime, a great deal must depend upon the soil on which it is used, which may account for the conflicting opinions respecting its effects in protecting the turnips against the fly. From six to eight bushels of quicklime per acre may be sown over the young plants successfully in dry weather; but it must be repeated after rain or dew; and this, as well as soot, requires to be regularly and evenly dusted over the plants. Mr. Birk says that he used slaked lime with perfect success; and although profusely, it did not at all injure the plants. It should be slaked at the time of use, and ought to be spread in a very hot state, when it burns the fly. Some danger to the plant seems to attend this process, arising from the heat generated by the lime—at least so I presume; but some little explanation is required in these statements to distinguish clearly between slaked and quick or unslaked lime. Very different were the results from Mr. Le Keux's experiments. Forty bushels of lime per acre were spread, he says, immediately before the seeds were sown, and did no good; and when the plants came up, and the fly was observed attacking them, lime-dust was thrown over them, so that many of the plants were quite white with a coat of it; after which as many flies were found upon those as upon any that were free, and they were eventually devoured. This is again quite at variance with the opinion, that repeated dustings of ashes and soot, when the plants are wet with dew, will keep off the fly, and prevent their feeding. In another place he states that the upper part of a field in a sheltered situation, with a south aspect, which has been sown with barley, was well dressed with lime, and sown early in May, with whistone turnips, which were destroyed as soon as they appeared above ground; the land was sown again, and harrowed, the surface being thickly strewn over with wood ashes; the plants were, however, devoured as rapidly as before.

The growth of the turnips being stunted by too frequent repetitions, they become fingery on light sandy soils, and are then more likely to fall a sacrifice to the fly. A good coat of clay or chalk has the effect in Norfolk and Suffolk of invigorat-

ing the land, and giving it the power of again producing good crops once in four years. The culture of mangel-wurtzel is well deserving the attention of the farmer, when the land gets tired of turnips; and it has the additional recommendation of not encouraging the increase of the turnip-beetles. As it is quite certain, I should say, that the beetles are attracted by scent, it appears to me likely that, if a field of turnips were planted round with a belt of mangel-wurtzel, the turnips might escape their attacks, if not entirely, to a very considerable extent; especially when the insects are believed to come from a distance; for at the early stage of the plants a few hours of respite may be of vital importance. The Swedish turnip, or *ruta-baga*, whether it be a hybrid produced by the turnip and cabbage, or a distinct species, has not the strong scent at an advanced period which is so perceptible in the English turnip when in rough leaf; and if there be as marked a difference of smell in the seed-leaves, it would give the former a decided advantage in exposed situations, where the beetles are attracted from distant localities: being sown in May or June, however, is, I conceive, not a recommendation, as I believe that to be a period of the year when the first principal brood is generally at its maximum, as the second is in August or September; but the temperature of the seasons may in this respect make a variation of a fortnight or three weeks on either side of the average: however this may be, it is admitted on all sides that the beetle is weakest in July.

I fear, on the other hand, that no early sowing can insure the turnip-crop; for as the beetles hibernate, the same warmth and sunshine that make the seed vegetate will bring the swarms of beetles from their retreats; and it is worth considering whether by early sowing we do not entice a hungry horde from their winter quarters, or from the banks and meadows where they are at first supported; whereas by not sowing until midsummer, the beetles may in the mean while be starved and drawn off to more favorable localities, or have fallen a sacrifice to small birds and the casualties of the wet and cold of our spring. Such seasons we know do not agree with the beetles; and I have observed that when the dew is upon the turnips in the autumn, they keep under the leaves, and appear to be asleep; and windy weather has a similar effect in rendering them quiescent. The crops being attacked and destroyed in the autumn, does not altogether militate against good success at midsummer, especially in forward seasons. Similar objections to the above may be urged against sowing the white turnips with the Swedes; for if the quantity of beetles be small, the Swedes may be preserved in consequence of the turnip being their favorite food; but on the other hand multitudes may sometimes be thus attracted from a distance, which would not otherwise, it may be presumed, have detected the Swedes, from their scent being less perceptible.

It is now three years since I intimated that "some benefit might be derived from destroying those cruciferous plants, *erysimum altharia* and *cardamine pratensis*," to which these *altica* are

\* Curtis's Brit. Ent. pls. 569 and 179, called sauce alone, or hedge-mustard, and common ladies' smock.

so strongly attached, for they grow in abundance in every hedge and meadow: they appear long before the turnips come up, and attract and give support to the parents of the future swarms that are to sweep away the crops of the farmer.\* As these plants often flower at the beginning of April, and produce their leaves at a much earlier period, it is almost certain that they nurse the fly, and are its great resources for food and nourishment in the earliest days of spring; but how to eradicate the *cardamine* is for future consideration. The hedge-mustard, and other cruciferous plants on banks and road sides, are quite under our control; and it is a duty which we owe to our neighbor as well as to our ourselves, to keep our fields and hedges clear of charlock and every allied weed of that family, all of which harbor the turnip-beetle.

Before dismissing this portion of the subject, two or three remarks will be useful. It is certain that manure gives strength to the turnip-plant, but it is doubtful if it will destroy the beetles. Hoeing and rolling may harass and kill many of them; and as this process promotes the more rapid growth of the plants, it must be attended with no slight advantages. I expect also that if it were performed in damp days, or after heavy dews, the benefit would be increased; for if the beetles leap in moist weather they often fall upon their backs, where they stick, and after being exhausted, become torpid and apparently dead, if the air be cold; but they reanimate as they are dried by the sun. In cold and wet weather it might not prove less efficient; for multitudes of the flies are then sheltered under and about the clouds, which being broken down, the insects must perish by the pressure; and if there were any chrysalides in the earth, they would in all probability suffer the same fate.

There are many who consider that turnips should be sown immediately after ploughing, and that much of the success attending a crop depends upon the diligence employed in getting in the manure and seed; whilst some maintain that the land should lie undisturbed for a fortnight before sowing. Such conflicting opinions, as far as the fly is concerned, may often be reconciled by the difference of the seasons when the observations were made.\* We know that turnips must not be sown in too dry nor too wet a state of the soil, yet this is precisely the state most fitted for the production of the fly; for it is well ascertained that a moderate degree of moisture is necessary to bring forth or to hatch almost all insects, and if this be accompanied by a mild air, it is the better suited to them; it is therefore reasonable to expect that after a fine early spring the turnip-beetles will be found most abundant.

From the dislike the fly has to repeated wet, I have always thought that watering the turnips would be highly useful; and this opinion is supported by Mr. Bayldon, who recommends them to be watered every other day, four, five, and six times if necessary.† Irrigating the land would not

have so good an effect, I think, as watering, because the beetles would only be floated off the leaves, if they were detached at all; and if they were left thus for two or three days, there would be a great chance of their recovering when the plants were left dry; whereas by the watering they would be forcibly brushed off, and get set fast in the earth and die. The benefit would be most felt, I conceive, on heavy lands with regard to the annihilation of the beetles; but it would every where have the advantage of destroying the chrysalis, by stopping up the pores of the soil, and so preventing the exit of the fly.

Nitrate of soda has been tried in two instances on crops of Swedish turnips with very beneficial effects; and it probably assists, from its peculiar qualities, in checking the increase of the beetles. The nitrate was sown two or three days after the seed; and it may be used on all soils excepting on chalk. It should be sown broad-cast, mixed with wood-ashes, which enable the sower to spread it more regularly.

We now come to what may be termed direct remedies.

The Paul-net, as it is called, after its inventor, although it has been considered as a toy, yet I am of opinion might be usefully employed; for I have seen a quart bottle filled with the little turnip-beetles that were all caught with this net. If I remember correctly, Mr. Paul's plan was to sow a small spot with white turnips early, as a decoy, and over that space to draw his net.\* It always struck me that vast quantities made their escape by skipping out of the net, which was its greatest defect, but this might be remedied by placing some sawdust at the extremity of the bag, mixed with lumps of common ammonia, sprinkled with spirits of turpentine, which perhaps would be better but either of these would kill a great many, and stupify the remainder, until the contents of the net were subjected to sufficient heat to deprive them of life. This process is no doubt troublesome, and requires to be repeated; and unless, perhaps, some alterations were made, it would not answer on an extensive scale. This, however, is no fatal objection to the principle.

A board newly painted or tarred, and drawn over the turnips, will catch multitudes of the beetles; for on being disturbed they leap against it, and cannot release themselves. I should recommend white paint; and the brighter it is the better, as all insects are attracted by light colors. Neither wet nor windy weather would be suited to these operations; for it is ascertained that the beetles are at such seasons disinclined to move; neither would mid-day in fine weather do, as they are then active, and fly well; for it is a well-known fact, corroborated also by the flight of swallows, that in hot days and sunshine insects fly high, whilst in damp weather they keep upon or near the ground.

probably have a good effect, but on a score of acres? If, indeed, a water-cart filled with brine could be conveniently once run over a field, it might, as there stated, prove a partial remedy, and it certainly is worth trying; for even should it not be effectual on that point, it would, no doubt, prove beneficial to the growth of the crop.—F. BURKE.

\* A very good representation of this net will be seen in Kirby and Spence's Introduction to Entomology. pl. 24, fig. 3.

\*The perusal of the report in the Transactions of the Doncaster Agricultural Society is strongly recommended, and in their "Analysis of the Returns," the date of every year is alone wanting to make it invaluable.

† How is this to be done? In a garden it might

Fumigation by burning stubble, weeds, &c., to windward of the field, so that the smoke drives along the ground, has proved effectual; but I should prefer burning to leeward as a preventive, for as the beetles are attracted by the scent of the turnips, and fly towards the wind, they would be baffled by such a manœuvre.

Watering the plants with brine sufficiently strong to affect the insects but not strong enough to injure the young plants, would, I expect, prove a most successful remedy; and when in rough leaf it would also kill the larvæ, and even destroy the eggs that were exposed to its influence.

In Hanover, fields of white turnips have been preserved from the fly by thickly sprinkling the dust of chalky roads on the young plants at night, when the heavy dew is falling, until they appeared covered with the powder. The fly, it is said, will at once disappear, especially if the next day be a bright sunshine, and the dust is dried upon the leaves, which prevents their little teeth from gnawing the leaf, or disgusts them in some other way, and they depart to more agreeable quarters. If the sprinkling be immediately succeeded by heavy rains, so that the dust is washed off, the operation must be repeated. Several other means are suggested by M. Wundram, which have proved to be useless in this country; and his reasoning induces a belief that he is not well acquainted with the habits of the turnip-fly. An infusion of wormwood sprinkled over the young plants and seed-beds will, he says, secure them from the attacks of the flies, as they dislike the bitterness thus conveyed.

Drawing boughs of the elder over the field is supposed to annoy the beetles, and drive them away; and the leaves of the elder, when fresh gathered, being covered with a glutinous liquor, and those of the lime, &c., when the honey-dew is upon them, are recommended to be strewed in gardens for the purpose of catching the turnip-beetles.

I confess that I have no faith in the plants being rendered obnoxious to the fly from steeping the seeds in oil, brine, brimstone, or milk, as practised by many. Such immersions may render the plants stronger, or cause more of the seeds to vegetate, which will at once account for the success that is said to be derived from this process. If, indeed, the eggs of the insect were laid upon the seed, the oil and brine would be most efficacious; but that notion is exploded.

Mr. Le Keux says that washing over the plants with sulphate of potash had no effect; and he very justly observes, that if the upper surface of the leaf could be poisoned, the beetles might feed upon the under side with impunity. Powdered sulphur, strewed one-tenth of an inch thick, did not deter the flies from attacking the plants, but it improved their appearance. Snuff, *assafetida*, a powder called *anti-tinea*, for preserving furs, proved equally powerless. They did retire from smelling salts (*Carb. am.*), and died immediately on being exposed to the effluvia from it; but a small bit placed an inch from the plant would destroy it also. This, or something that would overpower the scent of the turnips, might perhaps be advantageously employed in driving away or deceiving the fly. One ounce of tar, one ounce of olive oil, and two ounces of strong caustic potash, well mixed together, and shaken up with the requisite

quantity of water, were next poured, the fourth day after sowing, over a patch on a hill swarming with the fly, at the end of August. Not many of the seeds came up, but the few plants from them were of a healthy color, and acquired the rough leaf, a few only on the windward side being punctured; but several days' rain occurred at the most critical time, which might be their best protection.

Such are the remedies proposed; but I fear it is not by the experiments of a few philosophic men that we can hope to discover any positive antidote to so great an evil. We want correct data from every sort of soil under the various influences of climate and effects of cultivation, before we can fairly grasp the subject. Until we became acquainted with the *economy* of the beetle, we were groping in the dark. That important discovery has brought us a few steps towards the light; and those who wish to follow in the path of truth should try and examine Mr. Le Keux's experiments, which it is easy to do, by filling a garden-pot with earth, carefully sifted to take out all worms, centipedes, or other living animals, which might destroy the chrysalides. When this is done, plant in it a small turnip, in rough leaf, having a fine wire-gauze guard, large enough to enclose the plant, and fitting just inside the top of the pot. One or more pairs of the beetles must be placed, with a fresh turnip leaf, in a large-mouthed transparent bottle, then tie over the end a piece of muslin to prevent the escape of the insects; for if the cork or stopper be put in, the bottle will become wet inside, which will prevent the females from laying any eggs. I imagine they will not adhere to the damp leaf. The leaf may be examined daily through a magnifying-glass, and as soon as any eggs are discovered, they may be placed in the pot where the turnip is growing, that the little maggots may be able to get at the living leaves as soon as they hatch. The progress of the insect may thus be traced through its different stages; and it will only be necessary to place the garden pot in a saucer, into which water should be daily poured, if necessary to nourish and refresh the plant.

Let us not forget that amongst our best friends are the small birds, a great number of which, such as the gray and yellow wagtails, no doubt destroy incredible numbers of these insects in their various stages. Their nests ought to be protected, and the birds themselves defended from persecution.

There is another species of *Altica*, whose habits are similar to those of *Altica nemorum*, which materially assists in injuring the turnip crops. The habits of the brassy or tooth-legged turnip-beetle are not known, but may be expected to resemble those of the striped turnip-fly. I will now describe this insect, the *Altica concinna*, which is the same as the *Altica dentipes* of foreign authors.

It is more oval, convex, and shining than *Altica nemorum*, of a greenish-black color, more or less tinged with a brassy or copper hue. The horns are only half as long as the body, and thickest towards the extremity, of a pitchy color, with a few rust-colored joints next the head: the trunk or thorax is thickly but very finely punctured: the wing-cases are scarcely twice as broad as the trunk, but three times as long, having ten lines of strongly-impressed dots down each. The

wings are ample; the legs are black, the shanks or tibiae are bright rust color at the back; the hinder thighs are very stout; the intermediate and hinder shanks are armed outside with a short acute tooth, below the middle,\* and fringed with hairs and toothed with spines; the feet are dusky, with four joints, similar to those of *A. nemorum*. Length from  $\frac{3}{4}$  to 1 line.

It inhabits hedges, nettles, grass and turnip fields; and is abundant throughout England and the south of Scotland in the spring and summer.

I had nearly forgotten to remark that there is another little beetle of the same genus, far from uncommon upon the turnips, named *Altica obscurella*; but as I am ignorant of its economy I refrain from describing it.

In the investigation of this subject I have thought it necessary to consider every bearing that connects the beetle or fly with the turnip crop, that neither its habits nor any circumstance affecting its economy might be overlooked; but in treating of the other insects I shall not have such a variety of materials to digest, which will allow me to render their history more concise. I am now induced to recapitulate the leading features contained in the foregoing account, that they may be brought at one view before the reader.

There are at least two species of turnip-flies or beetles, the *striped* and the *brassy*.

The habits of the latter are not known.

The eggs of the former are laid upon the under side of the rough leaf, from April to September: they hatch in ten days.

The maggots live between the two skins or cuticles of the rough leaf, and arrive at maturity in sixteen days.

The chrysalis is buried just beneath the surface of the earth, where it remains about a fortnight.

The beetles live through the winter in a torpid state, and revive in the spring, when they destroy the two first leaves, called the cotyledons, or seed leaves.

There are five or six broods in a season.

These insects are most to be feared in fine seasons.

Heavy rains, cold springs, and long droughts, destroy them.

Their scent is very perfect: the beetles fly against the wind, and are attracted from a distance.

To extirpate them during the first three stages is apparently most difficult.

The beetles are sheltered in hedges, banks, under bark of trees, &c.

Their parasites have not yet been discovered.

First appearance of the beetles to be punctually observed, as affording the best chance in applying remedies.

Manure to render soil obnoxious to the insects scarcely to be expected.

Rapid growth of the plant the best security.

To secure which, sow plenty of seed, and of the same age.

Burning beneficial, by destroying the chrysalides.

Sheep-folding must destroy the insects in every state.

Deep-ploughing excellent when the chrysalides are in the soil.

Drilling far superior to broadcast, and believed in Scotland to keep away the beetles.

Dangerous to sow on a stubble crop; and long raw manure harbors the beetles.

Lime and soot—the benefit derived from them in this way very doubtful.

Mangel wurzel not favorable to the beetles; and Swedes probably less attractive than white turnips.

Mixing white turnips with Swedes not desirable, as the beetles may be attracted by the strong scent of the former.

Early sowing attended with disadvantages.

Destroy charlock, and all cruciferous weeds in fields and hedges, as they afford support to the beetles before the turnips come up.

Hoing and rolling harass and destroy the beetles.

Watering the crops, especially with weak brine, beneficial.

Paul-net and painted boards useful in destroying the beetles.

Fumigation, by burning stubble, &c., will keep off the beetles.

There are many other remedies proposed, some of which it might be well worth trying; and if we be defeated in our endeavors to vanquish this insect enemy, we must take the field again with fresh vigor until our efforts are crowned with success, and neither despair from disappointments nor rest in listless security from the apparent inertness of our foes. If we look back for one instant to experience, we shall find that after violent attacks of disease in the animal, or of blights in the vegetable kingdoms, they are generally succeeded by a respite of many years, which throws us so much off our guard, that when they return we are not prepared with any proper remedies, and not unfrequently they are altogether forgotten; thus, after a lengthened interval of tranquillity, when we think the hordes of hostile insects have departed for ever, they suddenly make their appearance, and take us by surprise and at advantage. The intelligent farmer must therefore be up and stirring, to detect the first breath of infection, and be instantly prepared with his remedy.

#### TRANSPLANTING PEAS AND EARLY VEGETABLES.

The method of rearing peas in pots or boxes in hot-beds or hot-houses, and afterwards transplanting them into the open ground, is a common practice, and often succeeds well; but I would recommend a method not so well known, but far preferable to that of pots and boxes, especially when they are to be raised on a hot-bed. This consists in having a quantity of turf cut into strips, say ten inches long and three inches wide, placing them in a close and regular manner over the surface of the whole bed, grass-side downwards. A row of peas, &c., is sown on each row of turf and afterwards covered with rich earth. When they are fit for transplanting, nothing more is required than to lift up the turf piece by piece, with the peas, &c. growing upon it, and place them where they are to produce their crop. By this means, the roots receive no injury, nor do the plants sustain the least check in transplanting. This method may be adopted with similar success in the raising of potatoes, beans, &c.—N. Y. Farmer.

\* From this circumstance it has been recently named *Chatocnema concinna*.

GALLATIN ON SUSPENSION AND RESUMPTION  
OF BANK PAYMENTS.*New York, 18th Oct., 1841.*

Sir : I had the honor to receive your letter asking my opinion on the propriety and effects of a resumption of specie payments by the banks of West New Jersey.

Banks have been permitted to issue paper money on the express condition that they should sustain its value at par with specie. Whenever the condition ceases to be performed, the privilege should likewise cease to exist. If that natural principle was rigidly adhered to, if the banks were expressly forbidden to issue the notes of any suspended bank (including of course their own notes when they had themselves suspended specie payments,) this alone would, in most cases, prevent a suspension, and when it did not, the provision must necessarily enable the suspended bank or banks, if solvent, to resume their payments within a very short time.

A much greater indulgence has been granted to banks in the case of a general suspension—much greater certainly in this instance than was necessary. But it is not the less an obvious moral and legal duty on their part to resume, as soon as possible. On that subject, as well as on the intolerable evils and immoral tendency of depreciated currency, I have nothing to add to what I have already published on several occasions, before, during and since the suspension in this city; and I beg leave to refer you to my last Essay and appendix; (particularly pages 20-24 and 59-62 of the Essay, and pages 101-114 of appendix.)

If a sense of justice be not a sufficient motive, it seems to me that their interest should induce the banks to perform their duty. The patience of the people is nearly exhausted. They have waited from time to time, always expecting the promised restoration of a sound currency. They now see that nothing has been done in that respect by the change of administration, that nothing can be expected from it. The opposition to banks, strengthened by the catastrophe of that of the United States, and by numerous other failures or defalcations, is daily gaining ground; and the effect, on the banking system generally and indiscriminately, cannot be otherwise averted than by a speedy restoration of the currency. I would, indeed, myself prefer a total exclusion of paper money to a continuance of that system, as now organized and administered west and south of New York.

In order to be able to resume specie payments, the banks which have suspended must have made the necessary preparations. It is not a matter of opinion, but a mathematical truth, that this can be effected in no other manner, than by a diminution of the liabilities of the banks, and a corresponding curtailing of their own loans and discounts. This last measure is always inconvenient to the borrowers, who call it an injury to the community. The continued suspension of specie payments, and circulation of a depreciated currency, are the general evil and the true injury to the community at large. The reduction in the amount of discounts is a partial evil which falls precisely on those who ought to bear it, since it was the excess of loans which was the cause of the suspension. Two years have elapsed since this took place for the second time. If any of

the banks have not, during a period so amply sufficient for the purpose, gradually lessened their discounts and their liabilities, so as to be prepared for an immediate resumption, it is their own fault, and it is far better that some of them should, if necessary, wind up their business, rather than that those which are sound and prepared should continue to suspend their payments, and that the general interest should still be sacrificed for the benefit of the few. The interest of those borrowers who oppose a resumption may be combined with that of some of the banks, either on account of their own embarrassment, as was the case with the United States Bank of Pennsylvania, or because they make larger profits, so long as they are not compelled to curtail their discounts. In either case plausible pretences for further delay are never wanted; and of this we had sufficient evidence prior to the resumption of specie payments by the banks of this city.

It is notorious—1st, that they did resume, not only without waiting for the co-operation of the other banks, but notwithstanding the various reasons or pretences alleged in opposition to that measure, all which were founded on its presumed impracticability, or on the pretended general distress which it would cause; 2d, that the resumption was effected with great ease, and without being attended with any of the fatal consequences which had been predicted; 3d, that, within less than three months, the example was generally followed by all the banks of the United States; 4th, that the subsequent suspensions were caused, exclusively, in all but some of the south-western states, by the inconceivable and unparalleled mismanagement of the United States Bank of Pennsylvania. As far as I am able to judge, the reasons now alleged for a continued suspension, which are drawn from the supposed inconveniences of a partial resumption, are as unfounded as those which were adduced for the same purpose in 1838. I cannot, for instance, perceive how the fact, that the produce of West New Jersey is mostly sold in Philadelphia, and paid for in Philadelphia currency, can, if your banks should resume before Philadelphia, prove more injurious to the producer, and to the country, than it now is. The price obtained for the produce, that given for the goods purchased in return, or the amount of debt payable in Philadelphia, extinguished with the proceeds, will remain precisely the same.

But the plea of expediency, whether well founded or frivolous, is utterly inadmissible, when the question is one, not of profit and loss, but of justice. I cannot see any substantial difference between an attempt to prove that the deteriorated specie currency, issued by a coiner, is a public benefit, and the assertion, that the suppression of a depreciated paper currency is a public injury. Repudiating, therefore, every objection to a resumption, founded on presumed convenience, or expediency, the fact remains to be ascertained, whether the sound banks of West New Jersey have generally made such preparations, as will enable them, at this time, to resume and to maintain specie payments? Of this you are the only competent judges. With their actual situation I am unacquainted, and can at most only point out, in a general way, the obstacles which, if they have not been foreseen, might defeat the attempt.



There are, always, in resuming specie payments after a protracted suspension, difficulties to be encountered, which vary in different places, and at different times; in the intercourse between two countries, or two districts of the same country, that which is possessed of the greatest circulating capital will, generally, be creditor of the other. The city of New York, partly on that account, and also from its having become the principal centre of the commerce and money transactions of the United States, is generally creditor in reference to all the other sections of the country; but, for the same reasons, the United States are generally indebted to Europe, and New York is the place where that debt is concentrated and must be provided for. On that account, it would have been very difficult for the banks of this city to have resumed, so long as the foreign exchanges were unfavorable; and they must always be prepared for such a contingency. At this moment, there is a enormous exportation of specie from this port to Europe, amounting to four or five hundred thousand dollars a week, and which, in the opinion of men of business, may continue six weeks longer. It has not, as yet, affected our banks, the specie wanted having been supplied by an influx from various parts of the country. It must be admitted that this drain, whilst it continues, renders the general resumption somewhat more difficult; but the portion which you might be called on to supply would be so small, that, so far as you are concerned, this can hardly be considered as an impediment.

West New Jersey is, however, in the natural course of trade, generally indebted to Philadelphia; and if, as a necessary preliminary to a resumption, the portion of that debt which is payable, not in Philadelphia, but in New Jersey, has not been considerably diminished, money dealers may, if you resume before Philadelphia, compel your merchants to pay that portion in specie. This may render it necessary for your banks to be better provided than would otherwise be requisite; and it seems to me that this is the only special difficulty growing out of your commercial connexion with Philadelphia, which you have to encounter.

I take it for granted, that your banks have preserved the public confidence at home, and will be supported by the community, so far as to be in no danger of a sudden run whenever you resume. It was the total loss of that confidence by the United States Bank of Pennsylvania, which caused the failure of the attempt to resume in January last. There would have been no difficulty, had the other banks of Philadelphia resumed alone, without making the vain attempt to sustain that bankrupt institution.

I hesitate whether I would answer your letter, partly because I had not the information necessary to form a correct opinion of the practicability, which, in my view of the subject, is the only question open to discussion; partly because neither this city, nor perhaps the country at large, can be materially affected by the course you may pursue; and I have no wish or business to interfere with the local concerns of another state. Yet, though the evils of a protracted suspension on your part may fall almost exclusively upon yourselves, I am fully sensible of the moral effect which your resuming, without waiting for the ac-

tion of the adjacent state, may have on public opinion there and in other quarters.

There appears to be an increasing disposition in Philadelphia and New Orleans, towards an early resumption; and I cherish the hope that it will be found practicable in both places. That event would, in its consequences, be decisive, and restore the currency almost universally.

I have the honor to be, with great respect, sir, your obedient servant, ALBERT GALLATIN.

To T. ARBOTT, JR., Esq.,  
Trenton, N. J.

For the Farmers' Register.

ON THE DEGENERATING, AND NECESSARY  
CHANGES OF SEED WHEAT.

Shirley, Dec. 10th, 1841.

Dear sir:—I observed a call upon some of the James river farmers in the last No. of the Farmers' Register to present their opposite views of preference for each of sundry different kinds of wheat as the supposed best crop, and as I was named among them, I will proceed to give some account of the different kinds of wheat which have been cultivated in this neighborhood, and the run they have had, for the last five and twenty years during which I have been a farmer. When I was a boy, about the year 1809, or 1810, I recollect hearing a good deal about the Baltimore bearded wheat, as it was then called, [or golden-chaff] which I believe had a great run about that time, and in 1816, when I began to farm, I found it yet in vogue, and quite popular, though the white May wheat was then the great rage, particularly for good land. The white May wheat had a run of some 10 or 15 years, and then degenerated so much as to be abandoned, and is now hardly to be met with at all.

The mountain purple straw wheat next had its run, and a most admirable wheat it was, and the longest in degenerating of any wheat we have ever had; but, alas! it has had its day, for it has now degenerated very much. The next wheat was the turkey wheat, or blue stem, as it is called by some, which is a very superior wheat, and next to the purple straw the best wheat we have ever had, and promises to continue as long a favorite as the mountain purple straw did; but it will degenerate after a while no doubt, as all wheats in our climate do. There have been many other wheats which have been popular for short periods during the same time with the above wheats; for instance, the yellow lummas, the goose wheat, the white flint wheat, the Lawler wheat, the red May wheat, and many others; but they were short-lived. There is one thing I have observed in all new wheats, that they all, or nearly all of them, succeed well for a short period, and frequently better the first year than ever after; which has led me to suppose that our climate and soil have the effect to degenerate the wheat plant, and that we should procure new seed from a distance every five or ten years at least, or resort to selecting our seed from the most perfect and most forward heads every year, and keep up the quality in that way, which was done with the white May wheat formerly, and kept it up as long as it otherwise

would have been; but even that proved ineffectual at last, and nothing but the introduction of new wheats from a distance will, I believe, answer perfectly.

N. B. I omitted to say in the communication above that I have found the turkey wheat for fallow and early sowing, and the red bearded wheat for late sowing, or corn-field, the best. The red bearded wheat, until a few years back, was not sown on my plantation for 15 years, and I think succeeds better in consequence of it.

If the agricultural board could induce the general government to import seed of various kinds from foreign countries in our national ships, and distribute them about the country, it would be one of the best means of aiding agriculture they could adopt; for it is impossible for private individuals to do it effectually. I myself a few years ago got a friend to bring me in a couple of bushels of seed wheat from England, and not a grain of it came up; but if it had been brought in by a fine, dry, airy national ship, and proper precaution taken to secure it from the damp of the ship, it might have succeeded. Change of seed in plants is as necessary as a change or cross in animals; and as to preferring one kind of wheat over all others for any length of time, it will be found not to answer, at least that is the experience of your friend and obedient servant,

H. CARTER.

P. S. By-the-by, talking of a change of seed, reminds me of changing my seed oats. Can you tell me how I can get some seed oats from a great distance, either west or north, as my own seed has run out entirely?

[The view taken by Mr. Carter, and which is entertained also by other good farmers, is an additional and important item in the list of comparative advantages of different kinds of wheat. According to this view, the wheat which is best at one time may be inferior and objectionable at a later time—and thus there is need for continual vigilance and unceasing successive experiments of the farmer, to know *when* as well as *how* to change his seed. We doubt, but do not deny, the entire correctness of the opinion. But it is entitled to high respect—and we would be glad to have it discussed more fully.

In answer to the inquiry in the postscript we have no particular information to offer; but presume that an order for a few bushels of the best esteemed oats, sent through a seedman of good reputation, would be successful. Mr. William Palmer, of Richmond, has connexions in Maine, and we have no doubt can be as honestly supplied by others, as he may be perfectly relied on for his own part of the agency.—ED. F. R.]

For the Farmer's Register.

#### A CURE FOR SCROFULA, OR KING'S EVIL.

Take of sarsaparilla six ounces, of China root six ounces, well prepared; put them into a clean

iron pot with two and a half gallons of water; place it on a fire, and when the water begins to simmer put on the top or lid of the pot and cover it over close with mud. Keep it simmering for about thirteen hours and let it remain in the pot until cold; then put it into a jug or other close vessel; if made right it will measure out about two gallons.

Before using, bleed the patient in the morning, and at night give a purge of rhubarb; when worked off, give a gill of the decoction night and morning for thirty days, then bleed and purge as above and work off with water gruel. Let patient live on light wheat bread (without salt) and molasses during cure.

Sir:—Above is a receipt said to be very good in scrofulous cases and is thought to be worthy of a place in your valuable paper, as it may afford relief to the suffering. Yours, &c.

A READER.

#### IMPORTANT IMPROVEMENT IN SELECTING SEED WHEAT.

From the Maine Farmer.

Mr. Editor:—Every thing that will advance the interests of the grain grower ought to be made known, especially in a country where the importation of bread stuff is as common a circumstance as in the state of Maine. And no farmer who has actually tried an experiment, and knows by experience that the process will succeed better than any former management, whether it be in the selection and preparation of seed, or the manner of preparing the ground on which it is cultivated, ought to be backward in communicating the result of his experience for the benefit of others.

But without further remarks I will proceed to state what this important discovery is, and leave it with those who are willing to benefit by the experiments of others to go and do likewise.

In the selection of seed wheat, take at least 6 bushels of a good quality, then take a sieve or screen with holes sufficiently large, so that 5 bushels of the 6 will pass through it. The one bushel that remains will be kernels of the largest size, and this should be used for seed. When this seed is grown and germinates, it will be found that the blades which spring from it will be uniform, and present the same healthy appearance, and will maintain the same equality until the time of harvesting. Thus instead of having so great a proportion of small weakly stalks start from diseased or pinched kernels, which can never produce any thing but small straw and consequently wheat of an inferior quality, the whole will stand a fair chance to come to maturity, divested of many evils which attend the sowing of grain where sifting is neglected.

But, says the reader, this important discovery of which you speak, don't amount to any thing at all. It has been known for years, that to sift out the small grains from seed wheat is a good idea, and is now generally practised among our best farmers. I will respectfully ask such, have you ever known sifting carried to the extent I propose? If you have not, you know but little of the real benefits that will result from this discovery, and a practice in accordance with its reasonable theory.



I am informed that Isaac Bowles, esq., of this town, tried the experiment the past season, and the result was what he had good reason to expect: the most perfect growth of wheat he has ever raised. All the heads were about the same size, the straw even, and no part seemed to have the advantage from the time it was sowed up to the day of harvest. And here I express a wish that Mr. Bowles will make his views and experience on this subject known to the public, as he can speak from his own experience in this matter. I believe if this practice should be adopted generally, by the farmers of this state, the quality and quantity of the wheat crop would in a very few years be increased one quarter by the simple process of sifting seed in the proportion I have named, and no farmer need be afraid of injuring his seed by carrying the principle to too great an extreme. Any one who candidly reflects on the subject, must be satisfied, I think, of the propriety and reason there is in the suggestions I have made. The improvement is within the reach of every farmer, and he can satisfy himself on this point. P.

Winthrop, November, 1841.

#### ROTATION OF CROPS—QUERY.

To the Editor of the Farmer's Register.

In the October number of your periodical is a communication on the subject of the rotation of crops, by J. S., who claims to be a practical, and I have no doubt is also a successful farmer. This important subject has also claimed much of my attention; and as the scheme of rotation of J. S., in many respects, so far as I understand it, resembles my own, I feel very anxious to gain from him a little more information, and therefore adopt the only means I have of reaching him, namely, through your publication, which I am always glad to see used as a medium of communication between our practical farmers.

I am myself a young farmer, and live in a section where wheat and corn are the principal products for market. My farming career was commenced, and I may add has continued with zeal. My attention was particularly given to the collection and application of manures; but, notwithstanding the most strenuous exertions, I was always discouraged at the very small quantity of land actually manured each year, in comparison to the amount required to be put into grain. This difficulty suggested the idea of manuring by green crops. I accordingly tried sowing and turning under rye, buckwheat, peas and clover. My experience teaches me that the two former are worthless as crops for manure. There can however be no doubt of the enriching quality of peas or clover turned under. J. S. introduces the peas in his rotation just after the corn. I would like to know whether he sows the peas the year succeeding the corn, thus giving up a whole year in the rotation to the pea crop, or does he sow the peas amongst the growing corn and turn them under the same fall that the corn is removed? If the latter, at what time, and at what state of advancement of the corn, does he sow the peas? What kind of pea, and at what rate per acre, does he sow?

After trying the method of sowing peas

amongst the growing corn, at the time of *laying by*, without success, I have adopted the other mode; viz.: to plough the land the spring succeeding the corn crop and sow the peas. The peas are turned under in the fall for wheat. I have only made one crop of wheat in this way. That was reaped this year, and was a noble crop for the season and land. The crop was so much better than I had expected, that I have engrafted the pea-fallow in my regular system, at any rate until I learn from the contributors to the Register some better plan.

The 5th item in J. S.'s rotation which he pronounces a valuable crop for the land is unfortunately omitted. May I ask him to supply it? His rotation resembles mine so closely, that I am pleased to be supported in my practice by the authority of one who has nearly doubled the product of his farm in the short space of seven years.

A YOUNG FARMER.

#### ANALYSIS OF COAL ASHES.

For the Farmers' Register.

The white inflorescence found on the coal from the Appomattox coal pits, when it has been much exposed to the atmosphere, together with the occasional appearance of sulphuret of iron, led me to look for some salt of alumina in its ashes. With this view, a portion of the recent ashes was lixiviated, and the solution thus obtained concentrated by boiling. To a portion of this solution liquid ammonia was added, which threw down an abundant precipitate of alumina, whilst the addition of muriate of baryta showed the presence of sulphuric acid. The remainder of the concentrated solution was slightly acidulated, and a little potassa added, the whole was allowed to stand ten or twelve hours, when well characterized crystals of alum were obtained from the solution—leaving no doubt of the presence of sulphate of alumina in the ashes.

As the ashes were just from the fire, it was evident that lime, if present, must exist in its caustic state. A portion of the ashes was accordingly treated with dilute muriatic acid, and from the filtered solution lime was precipitated by oxalic acid. The protoxide of iron was detected, and thrown down by liquid sulphuretted hydrogen.

Thinking that the matter might interest some of the readers of the Register, the same experiments were repeated on a known quantity of ashes, with the following result, which is communicated, not as an exact analysis, but as an approximation, believed to be sufficiently accurate for every practical purpose.

Alumina	- - - - -	2.5
Lime	- - - - -	1.1
Oxide of iron	- - - - -	1.2
Cinders, earthy and silicious matter	- - - - -	95.2
		100.0

As the ashes in towns are usually mixed with animal matter, which during decomposition gives out ammonia, the value of these ashes as a manure would, according to Liebig, depend greatly on the sulphate of alumina, which is readily decomposed by ammonia. The ammonia, which

otherwise would be lost, is converted into a sulphate, leaving the liberated alumina to absorb more ammonia. The caustic lime is converted into a carbonate by combining with carbonic acid from the atmosphere, or meeting with acid in the soil is thus neutralized.

But my intention was not to present theories, but barely to state the fact that the ashes from the bituminous coal used in this place, contain *sulphate of alumina and lime*, and to indicate the process by which any of the readers of the Register might satisfy himself of the same fact.

M. TOOMEY.

Petersburg, Dec. 18th, 1841.

#### MR. WEBB'S PROCESS OF MAKING SUGAR FROM CORN-STALKS.

Extract from the Farmers' Cabinet.

With regard to Mr. Webb's late experiments on corn-stalks, I coincide with you in the opinion, that the samples of sugar and molasses which were exhibited at the Horticultural Society's rooms in Philadelphia, were far superior to any that I have seen made from the beet by first process; his published account of the mode of manufacture is interesting, and the comparative yield per cent. of sugar is very great, and not easily to be accounted for; for while he is obtaining one quart of crystallizable liquor from six quarts of expressed juice from the corn-stalk, the Louisiana planters find that their richest juice from the cane yields no more than one in eight, the average being from thirteen to fifteen, and some as low as thirty or fifty for one. Mr. Webb's communication has found its way into many of the distant papers, and they have generally made it appear that he has obtained 1000 pounds of sugar per acre from the corn-stalks, whereas, he only says his opinion is that that quantity per acre may be obtained by an improved mode of cultivation, &c.; but I would ask, would even that quantity of sugar pay the expense of manufacture and remunerate the loss of the corn crop? I confess that I fear not.

You very properly compliment Mr. Webb on his success, and I am willing to award him a medal for his ingenuity and perseverance, but, for what part of the process he conceives he has a right to a patent, I am at a loss to conjecture. If it be upon the simple fact of having obtained sugar from the corn-stalk, hundreds of old people will tell him they accomplished that, many years ago, and long before he was born, it being a common practice in the time of the revolution; the manufacturers, however, contenting themselves with the syrup, and not carrying the evaporation to the crystallizing point, their object of procuring molasses being obtained. Or, is it in the simple operation of extracting the ear in its embryo state, by which to concentrate the juices in the stock and to prevent their dissipation? Now this has been practised for ages on the cocoa-tree for the very same purpose, and Mr. Webb no doubt knew it, and has merely adopted the process. We are told, "It is usual to deprive some of those trees of their fruit-buds, in order that they may produce a drink called 'paviah arrack,' and it is the employment of some men to collect this article, which is sold under the name of toddy." It cannot be for the

peculiar process of manufacture, for the very simple mode described in Mr. Webb's letter, and the state of the molasses exhibited, prove that the operations must have been of the most ineffective kind, or the molasses would not have held at least 50 per cent. of sugar in solution, a convincing fact that the point of concentration had not been either understood or practised, and that the whole process of manufacture had been most ineffectually performed. Now, let it not be supposed that I wish to detract an iota from the credit which is Mr. Webb's due; but I wish that he would inform the readers of the Cabinet, what are the specifications upon which he grounds his right to restrict us from doing what has been done for the last age; pointing out what original principle or new combination is exhibited in his mode of manufacturing sugar from the corn-stalk.

J. M. C.

Eastern Shore, Md., Nov. 10, 1841.

#### STOOKING CORN. CASTING FOAL.

From the New England Farmer.

In the Farmer, of November 24, we have Mr. Durand's method of stooking corn, from the Albany Cultivator. With him I entirely agree, that cutting up corn is the easiest, safest and best way of managing, both for grain and fodder; and also, that laying down the corn, or binding it into bundles, is tedious and unnecessary. I take five rows, selecting two good hills on the centre row, and twisting their tops together for a foundation, then cut and set round these two hills as much as will make a stook of a suitable size. Put your arms round the stook, and take hold of about half a dozen good stalks, cross them, bring them forward, and tie with a grain knot. Then double down the tassels, and bind with one stalk, or twist them together, and the stook is done. I think my way rather the best; for two hills stand bracing, and give the stook such a support that they cannot blow over. The space in the centre gives the air a chance to circulate, and the corn will not damage in any weather, even if put up green and wet. But I think the greatest improvement on Mr. Durand's mode is in tying with the stalks; this, though difficult to describe, is done in an instant, and saves the trouble of making bands. Doubling down the tassels is of no great consequence, but adds to the neatness of the stook, and a very slight fastening is sufficient. Corn put up in this way will stand for any length of time in any kind of weather, and be perfectly safe from every thing but vermin. When you wish to cart it, let one hand bend over the stook, and another cut the standing hills with a sickle, and both together throw it in the cart.

Now my hand is in, I wish to make an inquiry, and state a fact, hoping that you, Mr. Ednaar, or some of your readers, will favor us with your opinion.

I have often heard that the sight of fresh beef would make a mare with foal miscarry, but always considered it as a moon story. Is it true or not? Now for the fact. We had a four-year old mare which had brought a fine colt this spring, and was again with foal. About three weeks since, some beef was to be killed on the barn floor



near her stable. A neighbor, who was assisting, said she must be turned out of the barn, or she would lose her calf. As it was cold and stormy, I would not consent, but to pacify him, put her in a remote part of the barn, and moorly out of sight of our operations; and when the beef was carried in and the floor cleaned up, she was returned to the stable. In a few days, I perceived that something was the matter with her; she was dull and sluggish, hair looked bad, and something was evidently the matter, though I did not suspect the real cause, but laid it to her lampers and shedding her teeth. In just fourteen days she miscarried. This one case establishes nothing, and though every body here is sure that the same effect will follow the same cause, yet no one can give me another instance in *their own knowledge*. I can easily suppose that beef or any thing else that would frighten a mare, might produce this effect; but this mare was not frightened, betrayed no uneasiness, and kept eating the whole time. For old traditions, unsupported by evidence, I have but little respect; but as all true theories are formed by a collection of facts, I submit this, with the hope it may prove in some way useful. B.

Kennebec Co., Me., Dec. 5th, 1841.

Our correspondent B., in his sensible remarks, has said all that seems necessary, unless more facts can be adduced. We never before heard of the existence of the opinion he alludes to, and have nothing to say either in its support or relation. Can any one give us other facts?—ED. N. E. F.

#### COMPARISON OF MANURES.

From the (Eng.) Gardeners' Chronicle.

Messrs. Bouscington and Payen have lately produced an elaborate memoir upon the comparative value of different kinds of manure. An abstract only of it has as yet reached us, the substance of which is as follows:—These chemists regard nitrogen as the element whose presence is of the greatest importance in manure, and every substance capable of furnishing it becomes valuable in an agricultural view, provided that substance can extricate azotised products in a soluble or volatilizable state. If, however, the nitrogen is incapable of entering into putrid fermentation, and of so furnishing ammoniacal salts and other azotised combination, the substance containing it can be of no use for manure; as is proved by the shale of the coal measures, which contains considerable quantities of nitrogen, and yet has absolutely no effect as a manure. Hence the value of a manure is to be determined by the power it possesses of yielding ammonia; putrid urine, for instance, one of the most energetic of fertilizing principles, yields carbonate of ammonia; and guano, that rich compound which for centuries has given fertility to the arid sands of the Peruvian coast, consists almost entirely of salts with an ammoniacal base. The authors do not undervalue the importance of other substances, such as alkalis or earthy salts; on the contrary, they admit their presence to be indispensable to the growth of plants; nevertheless, it is to ammonia that they assign by far the most importance. The following table gives the result of their inquiry in re-

spect to a considerable number of substances, and shows how many loads of each are required in order to produce the same effect as 100 loads of common farm yard dung. We have omitted from these tables a few substances which, not occurring in this country, have no interest for farmers and gardeners in Great Britain.

#### A Table of Manures.

Showing the numbers of loads required in both the moist (or urinary) and dried (or prepared) states, to equal 100 loads of farm yard dung, so far as the quantity of nitrogen is concerned.

	Moist.	Dried.
Pea straw	-	22 100
Sainfoin straw	-	83 361
Vetch straw	-	39 174
Wheat straw	-	166 659
Do.	-	81 367
Do., lower joints	-	97 453
Do. upper joints, with the heads after thrashing	-	80 137
Rye straw	-	235 975
Do., at 1841	-	95 390
Oat straw	-	142 541
Barley straw	-	173 750
Wheat chaff	-	47 207
Jerusalem artichoke straw	-	105 463
Broom	-	32 142
Green beet leaves, (janes)	-	80 43
Potato leaves	-	72 84
Carrot leaves	-	47 66
Heath leaves	-	22 102
Sea wrack	-	46 138
Do.	-	42 123
Do.	-	28 85
Do. fresh from the sea	-	74
Mud dust	-	8 39
Buried clover roots	-	24 110
Flax cake	-	7 32
Rape cake	-	8 35
Fish cake	-	74 322
Grease cake	-	11 49
Beet root pulp	-	35 154
Do.	-	105 154
Potato pulp	-	76 100
Starch water	-	571
Do.	-	645
Starch refuse	-	111 107
Do.	-	24
Dunghill drainings	-	67 126
Sawdust of acacia	-	137 513
Do.	-	173 629
Do. of fir wood	-	250 886
Do.	-	173 629
Sawdust of oak	-	74 256
Solid cow dung	-	125 84
Cow urine	-	90 51
Mixed cow dung	-	97 75
Solid horse dung	-	72 88
Horse urine	-	15 15
Mixed horse dung	-	54 64
Do. pig dung	-	63 57
Do. sheep dung	-	36 65
Do. goat dung	-	18 49
Pigeon dung	-	4 21
Liquid Flemish manure	-	210
Do.	-	181
Belloni's pondrette	-	10 44
Oyster shells	-	125 487
Marl	-	78 377

	Moist	Dried.
Dry muscular flesh	-	3 13
Cod salted	-	5 17
Do., pressed and dried	-	2 10
Blood soluble	-	3 12
Do., liquid	-	13
Do.,	-	14
Do., coagulated and pressed	-	8 11
Do., dry in oil	-	2 11
Feathers	-	2 11
Cow's hair	-	2 12
Woollen rags	-	2 9
Horn scrapings	-	2 12
Cockchafers	-	12 14
Bones, boiled ( <i>fondus</i> )	-	5 25
Do., moist	-	7
Do., fat	-	8
Glue refuse	-	75 213
Glue dross ( <i>mare de colle</i> )	-	10 34
Graves	-	3 15
Animal black of the manufacturers	-	37 95
Animalized black	-	36 98
Noir des camps (?)	-	32 65

#### "THE STONE HOUSE."

For the Farmers' Register.

This building, whose history is now entirely wrapped in the mystery of the past, after remaining for a century or more unknown to its nearest neighbors or the oldest inhabitants, begins to arrest the attention of the present day; and numerous and wild are the conjectures with regard to the authors and the purposes of its construction.

The *Stone House* (for such it is now familiarly termed by every one in the vicinity) is situated in the upper part of James city county, on the land (an uncultivated tract) of Major Edmund Christian, on the right bank of Ware creek and about 5 miles from its junction with York river. Recently finding himself at leisure, while in a visit to King and Queen county, the writer determined to visit this object of growing curiosity. A party of four persons accordingly, with this purpose, left the King and Queen shore in the morning of the 21st of November, and after a delightful row across the beautiful York, landed at the mouth of Ware creek. A strong ebb tide opposed the ascension of the creek in the boat, the party thence proceeded on foot, and it was well they did, for had they gone up the creek, (which was their original intention,) without a guide, they would not have found the object of their search, though they thought that they had received all necessary instructions. With the help of a guide, after a circuitous walk of six miles, through the most broken and desert country to be found east of the Blue Ridge, they reached the object of their visit.

The stone house is now in ruins, more or less of each wall having tumbled down, no trace of either the roof or floor being left. It was a rectangular building  $18\frac{1}{2}$  by 15 feet. The four corners stand nearly at their original height, being 6 feet above the level of the floor. The chimney rises in a good state of preservation 5 feet higher, but there is sufficient evidence that it was originally still more elevated. Between

the corners, the walls are yet in a sufficient state of preservation to enable one to come at an accurate idea of the building as it stood entire. Its elevation was only one story, with a basement room half below and half above the surface of the earth. It stands nearly north and south. At the south end is the chimney, which projects outside of the wall, has no fire place in the basement, but a well finished semi-circular fire place in the room above,  $3\frac{1}{2}$  feet wide and 2 feet deep, with only one flue 12 by 12 inches. On the west end is the doorway giving entrance into the upper and also into the basement room; this doorway is 6 feet wide. For what purpose could a door 8 feet wide be needed in a house  $18\frac{1}{2}$  by 15 feet?

On the north there is a door 3 feet wide into the basement, and on each side of the door a hole through the wall (which is 2 feet thick) resembling a small port-hole, measuring on the inside 20 by 10 inches and on the outside 20 by 4 inches. Each hole is exactly the same size, and constructed with care. If these holes were merely intended for purposes of ventilation, why were they made wider within than without, and why were they both put on the same side with the door? On the east side is seen one jamb of a window or port-hole, and from its position not being in the middle, there is every reason to believe there must have been a second opening corresponding thereto in the same side. A half burned door lintel, which has recently fallen from the door of the basement room, is the only remnant of wood left; it is of white oak and was evidently sawed with a whip saw. The walls of the house, which are 2 feet thick in the basement, and 18 inches above, are constructed of ferruginous sand stone, of which an abundance is found in the hill on which the building stands. The stones, which are not large, have generally flat beds and are hammered to a true face, and all the openings are finished with great care. The cement used is lime mortar, and most have been very good. The measurements are all very exact, and the work bears ample testimony of great care and nicety in its structure.

This ruin stands in an extensive waste of woods, on a high knoll or promontory, around the base of which winds Ware creek. It is at least 100 feet above the level of the water and 300 feet from its margin. The site can be approached by land only by a long, wild and circuitous route, winding along on the ridge or backbone of this promontory, which is sometimes so narrow that two carts could not pass abreast. When the fact is mentioned that there are many such promontories, equally wild, circuitous, abrupt and separated from each other by deep and gloomy ravines whose precipitous sides are covered with the dark evergreen laurel, it can be easily imagined how very difficult it would be to find the place without a guide. By water, the *Stone House* is almost equally difficult to find, from its height above and distance from the creek. It stands amidst the original growth of trees, and is rendered still more secret by their deep foliage for half of the year. Just over it a large chestnut oak spreads out its extended branches, some of which approach so near the top of the ruin, that they must have been the growth of a period posterior to the erection, perhaps of the destruction of the

house. Two small trees are at this time standing within the area of the walls.

What were the purposes of the erection of this building? Was it built for concealment, for defence, or for a trading post with the Indians? It is too inaccessible for the last. The wide doorway would seem to militate against the second supposition, though the port-holes, if such, would seem to warrant such a conclusion. It was no doubt erected by some one as a permanent place of secret retreat and probably of defence; but why such care in its construction? Conjecture is now vain. It may be connected with some interesting passages in the lives of some of the first settlers of the country, or may have been the haunt of some of the followers of Bacon at a later date. It is to be feared that the mystery will never be revealed, for the oldest inhabitants have descended to their graves without knowing its history and scarcely its existence. R.

[The most plausible supposition is, that "the stone house" was one of the places of defence of the unsuccessful followers of Nathaniel Bacon, who still held out long after the death of their chief had destroyed all hope of success for the rebellion. The interesting old account of the rebellion, published in the 'Virginia Gazette,' (and of which we have but the part in the number of February 23, 1769,) has the following passages, which seem to confirm this opinion. It is true that they do not refer directly to any other fortification than the main one at West Point, (the point of junction of the Pamunkey and Mattaponi rivers,) but that place is only seven or eight miles above "the stone house," and the latter could be soon and easily reached from the former. "The stone house" might have been constructed as a place of last refuge and concealment, and also for desperate defence. The wide door might have been used for a small piece of field artillery. The very broken face of the land thereabout makes the site not only very difficult of access, but even of discovery. The land for miles in extent was, and must ever remain, a forest waste, and scarcely offers an inducement, saving this ancient structure, to any one to encounter the labor of passing over the continually occurring high and steep hills and the many ravines which separate them. The extracts bearing on this point, and showing the effective resistance made to the royal government, are as follow. It should be observed that the narrator is unfavorable to the rebels.]

"Bacon's death, who was the life and soul of the party, struck the rebels with the greatest consternation; but Joseph Ingram, Bacon's lieutenant general, George Walklate, his major general, and Richard Lawrence, the incendiary, reanimated them, and persuaded them to persevere in their opposition to the governor. They now became banditti rather than soldiers, carried spoil and devastation wherever they went, and com-

mitted every kind of violence upon the estates of the loyalists, and that they might have a place to secure their retreat in case of opposition, they took possession of West Point, fortified it very strongly, and made it their place of arms."

After stating succeeding military operations elsewhere, favorable first to the rebels and afterwards to the royalists, the narrative proceeds thus:

"While these things were transacting on James river, Col. Ludwell was very active upon his side, and reduced all the country upon York river, except West Point, where Walklate, Ingram and Langson [Lawrence?] defended themselves with a great deal of valor. These happy incidents put the governor in a situation to besiege that fortress," &c.

"From that time all James river submitted to the governor, and he soon re-established his authority through the country, except at West Point, where the rebels made a resolute defence, which saved them.

"The governor, tired out with fighting, wrote a compliant letter to Walklate, which he sent by Capt. Grantham, with orders to offer him and all the rebels in the fort a general pardon, upon condition that they delivered up their arms and ammunition, with every thing in their possession which they had plundered from the loyalists and the Indians. Walklate knew his case to be desperate, and cheerfully accepted the governor's offer. The terms were kept on both sides, and as a reward to Walklate for his ready submission, the governor presented him with the plunder belonging to the Indians."

From the Edinburgh Quarterly Journal of Agriculture, for December, 1841.

#### ON SAW-DUST AS MANURE.

By Henry H. Drummond, esq. of Blair-Drummond, M. P.

The observations on saw-dust as a manure, in the March number of the Transactions of the Highland Society, induce me to mention, that I have for a number of years been in the practice of using saw-dust in agriculture. I have not, however, used it with dung in the manner mentioned by Mr. Sim, but have kept it in composts for about three years, which time has appeared to me necessary for its proper decomposition. This process is greatly facilitated by mixing the saw-dust with lime in the proportion of about one-tenth part of lime, and the compost is much improved by the addition of road-scrappings, or earth of any sort that can be procured. The saw-dust heap is a convenient place of deposit for dead animals, which are thus disposed of to great advantage. A compost of this kind, which has been well mixed and decomposed, and turned over by the spade at proper times, will produce an excellent crop of turnips.



From the London Farmers' Magazine, December, 1841.

# OF THE SUPPLY OF NITRIC ACID TO PLANTS.

(From Professor Johnstone's Lectures.)

In regard to the action of nitric acid upon vegetation, it is known—

1<sup>st</sup>. That when, in the form of nitrates of soda, potash, &c., it is spread upon the soil, it greatly promotes the growth and luxuriance of the crop, and increases its produce; and

2<sup>d</sup>. That, when other circumstances are favorable to vegetation—as in certain districts in India—the presence of an appreciable quantity of these nitrates adds largely to the fertility of the soil.\*

The same effects are unquestionably produced by the addition of ammonia or by its natural presence in the soil. The beneficial influence of both compounds, then, being recognized, the relative extent to which each operates upon the general vegetation of the globe will be mainly determined by the circumstances and the quantity in which they respectively exist or are reproduced.

In regard to the existence of nitric acid, it is not known to form a necessary constituent of any of the solid rocks of which the crust of the globe is composed, but it is diffused almost universally through the soil which overpreads the surface. In the hotter regions of the earth, in India, in Africa, and in South America, it in many places accumulates in sufficient quantity to form incrustations of considerable thickness over very large areas, and in many more it can be separated by washing the soil. Even in the climates of Northern Europe, it is rarely absent from the water of artificial wells, into which the rains, after filtering through the surface, are permitted to make their way.†

\* For the following, and other interesting notices, regarding Indian agriculture, I am indebted to Mr. Fleming of Barochan, in Renfrewshire, whose long residence in the districts to which he alludes, as well as the interest he takes in practical agriculture, renders his testimony very valuable:—

"The districts of Chaprah, Tirhoot, and Shahabad, near Patna, where a large proportion of the salpêtre sent from Bengal is produced, are considered the most fertile in Bengal, producing two and sometimes three crops yearly. The natives of these districts, particularly a caste called Quirees (hereditary gardeners), who cultivate the best land, and produce the best crops, are in the habit of irrigating their fields with water from wells so strongly impregnated with salpêtre and other salts as to be quite brackish, and they consider onions, turnips, and peas, most benefited by this irrigation. Grain crops also grow most luxuriantly on lands yielding salpêtre, where there is enough of rain within a week or two after the seed is sown, but if a drought follows the sowing, and continues for three weeks or a month, the leaf becomes yellow, and the crop fails.

"The Hindoos do not generally manure their lands, as the dung of the cattle is used for fuel, but the Quirees collect the ashes of cow dung and of burned wood, and use it as a manure in some cases, chiefly for the poppy plant.

"The Hindoos have for ages been well acquainted with the rotation of crops, and the advantage of fallowing land,—although a great proportion of the land is almost constantly in rice, Indian corn, or millet, during the rainy season, and in wheat or peas during the dry season."

† It occurs in the wells of the neighborhood of Berlin, (Mitscherlich,) in the form of nitrates of

On the whole, nitric acid and its compounds appear to exist, ready formed, in nature, in larger quantity than either ammonia or any of its compounds.

Of these nitrates, as they do of ammonia, the rivers must be continually bearing a portion to the sea, but there are in nature unceasing processes of reproduction, by which not only this waste of the nitrates is repaired, but that further waste also, which is caused by their absorption in the roots and subsequent decomposition in the interior of plants. Let us shortly consider these processes of reproduction.

1<sup>o</sup>. When a succession of electric sparks is passed through common air, nitric acid ( $\text{N O}_3$ ) is slowly but sensibly formed. The currents of electricity which in nature traverse the atmosphere must produce the same effect, and the passage of each flash of lightning through the air must be attended by the formation of some portion of this acid.

After a thunder-storm, plants appear wonderfully refreshed; in thundery weather they grow most luxuriantly, and other things being equal, those seasons in which there is much thunder are observed to be most fruitful. Some have ascribed these results to the immediate agency of electricity on the growth of plants.\* Is it not equally possible that they may be connected with this necessary production of nitric acid?

In the rain which fell during seventeen thunder storms, Liebig found nitric acid always present, and generally in combination with lime and ammonia. In the rain which fell on sixty other occasions, he could detect it only twice. In minute quantity nitric acid is difficult to detect. How much, then, must be formed in a thunder storm, even in our climate, to make the presence of this acid always appreciable in the rain that falls—how vast a quantity in those warmer climates where such storms are so frequent and so appalling!

2<sup>o</sup>. When a mixture of ammonia with oxygen gas is exploded by passing an electric spark through it, a quantity of nitric acid is formed, even when the oxygen is not sufficient to oxidize the whole of the ammonia † (Bischof). Hence, if in the air, as we have seen reason to believe, the ammonia given off from decaying animal matters, and from other sources, be decomposed by the atmospheric electricity, there will necessarily be formed at the same instant a portion of nitric acid, at the expense of the nitrogen of the ammonia itself. This nitric acid will, as necessarily, combine with some of the ammonia which still remains in the air. Hence the existence and production of nitrate of ammonia in the atmosphere, and the consequent presence of this acid along with ammonia in rain water.

potash, lime, and magnesia, in the wells round Stockholm, and may be expected in all wells that are dug (Berzelius).—*Traité de Chimie*, iv. p. 71.

\* Sprengel, *Chémie*, i. p. 99.

† It was shown above, that one of ammonia  $\text{N H}_3$  requires three of oxygen to decompose it, forming 3 of water, and setting the nitrogen free. But, in reality, as Bischof has shown, the nitrogen is not wholly set free, but a portion both of its hydrogen and nitrogen combine with oxygen (are oxidized) at the same instant, forming simultaneously both water ( $\text{H O}$ ) and nitric acid ( $\text{N O}_3$ ).

Thus the very cause which in the preceding section was shown to operate in constantly diminishing the amount of ammonia in the air, and the operation of which certainly renders improbable the existence of this compound in the atmosphere in the large quantity supposed by some\*—this same cause is at the same moment constantly reproducing nitric acid. And, though much of what is thus produced must necessarily, as in the case of ammonia, be carried down to the sea by the rains, or be directly absorbed by the waters of the ocean themselves, yet it is obvious that in whatever proportion we may suppose the ammonia of the air to reach the leaves and roots of plants, in no less proportion must the nitric acid, with which it is associated, be enabled to enter into the circulating system of the various tribes of living vegetables, that flourish on every quarter of the globe.

3°. Again we have seen that, during the decay of vegetable substances in moist air, ammonia is formed at the expense of the hydrogen of the water, and of the nitrogen of the air. In consequence of, or in connexion with such decay, nitric acid is also largely produced in nature.

The most familiar, as well as the most instructive, examples of this formation of nitric acid is in the artificial nitric-beds of France and the north of Europe. These are formed by mixing earth of different kinds with stable manure or other animal and vegetable matters, and exposing the mixture to the air in long ridges or conical heaps, which are occasionally watered with liquid manure, and turned over to expose fresh portions to the air. After a time, perhaps once a year, the whole is washed, when the water which comes off is found to contain a variable quantity of the nitrates of potash, soda, lime, and magnesia, which are employed for the manufacture of saltpetre. In these nitric-beds it has been observed that the production of nitric acid either does not take place at all, or only with extreme slowness, unless animal and vegetable matter be present in considerable proportion. And yet the quantity of nitric acid which is formed is much greater than could be produced by the oxidation of the whole of the nitrogen contained in the organic matters present in the mixture.† It is also observed that the nitre-beds are more productive when a portion from one outer face of the heap is lixiviated from time to time, and the washed earth added to the other side, than when the whole is lixiviated at once, and again formed into a heap and exposed to the air.

It appears, therefore, that organic matters are in our climate necessary to cause the formation of nitric acid to commence, but that after it has begun it will proceed in the same heap for an indefinite period, and at the expense apparently of the nitrogen of the air only.

Compost heaps are in general only artificial nitre-beds—often unskillfully prepared and badly managed—producing, however, a certain quantity

of nitrates, to the presence of which their effect on vegetation may not unfrequently be ascribed. To this fact we shall hereafter recur.

The soils, in the plains of India, and in other similar spots in the tropical regions, may be regarded as natural nitre-beds, in which the decay of organic matter being vastly more rapid than in our temperate regions, the production of nitric acid is rapid in proportion.\*

4°. But in many localities in which the presence of organic matter is not to be recognized in sensible quantity, the production of this acid is observed to proceed with a constant and steady pace. Thus, from the walls of certain caves in Ceylon a layer is yearly pared off, which yields an abundant crop of saltpetre (Dr. John Davy). The celebrated Mammoth cave in Kentucky, situated in a limestone ridge, yields an inexhaustible supply of nitrate of lime. During the war with Great Britain, fifty men were constantly employed in lixiviating the earth of this cave, and in about three years the washed earth is said to become as strongly impregnated as at first. Through the cave a strong current of air is continually rushing, inwards in winter and outwards during the summer months. On the plaster of old walls, especially in damp situations, an efflorescence of this and other nitrates is frequently observed over every part of Europe. In China, according to Davis, the old plaster of the houses is so much esteemed as a manure, that parties will often purchase it at the expense of a coating of new plaster. Old clay walls, and especially the walls of clay-built huts, are said to be very fertilizing to the land, when applied as a top-dressing; and in some parts of England, where the land is poor, the people are said to pile up the soil in the form of walls, in order to improve its quality. These latter facts seem to indicate that both in China and in England nitric acid is produced in similar circumstances, and that to its production the fertilizing action of the old plaster, and of the weathered clay, is alike to be attributed.

In the cultivated soil, also, this acid is formed in ordinary circumstances. Braconnot found nitrate of potash in the botanic garden at Nancy, in a portion of soil in which poppies (*papaver somniferum*) had grown luxuriantly for ten years in succession—in larger quantity in the soil surrounding the interlaced roots of an *asclepias incarnata*, growing in an ordinary flower-pot, with a hole in the bottom—as well as in moss-earth, in which a plant of *euphorbia breoni* had been grown in a pot.‡

There is little reason to doubt, indeed, that nitrates are to be found, in greater or less quantity, in all cultivated soils.

I shall not enter into a detailed inquiry how this nitric acid is formed. It is probable that as in

\* See especially Liebig's *Organic Chemistry applied to Agriculture*, p. 74.

† Dumas, *Traité de Chimie*, ii., p. 725. He adds, that 100 lbs. of nitre contain the nitrogen of 75 lbs. of ordinary animal matter, supposed in a dry state, or of 300 or 400 lbs. in its ordinary state of moisture,—a much greater relative proportion of animal matter than is ever added to the heap.

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\* We are as yet too little acquainted with the natural history of the district of Arica in South America, in which, as already stated, the nitrate of soda has been accumulated in such large quantity, to be able to say to what special cause the accumulation is due. But as, from the description of Mr. Darwin, the locality appears to have been the site of an ancient lake, it is not unlikely that the nitrate may have been derived from the successive washings of a soil similar to that of India, by rains or periodical floods which for a long period emptied themselves into or fed the lake.

‡ *An. de Chim. et de Phys.*, lxxii., pp. 33 to 35.

the atmosphere ammonia may be decomposed and give rise to the formation of nitric acid, so in the soil this acid may result from a similar decomposition, proceeding more slowly, but according to the same natural laws. In warm climates, indeed, it appears certain that the ammonia which is evolved or formed during the decay of animal and vegetable substances, does speedily, and to a great extent, undergo oxidation,\* and thus give rise to the greater abundance of nitric acid with which the tropical soils abound.

Thus, in the economy of nature, much ammonia is decomposed in the soil also, and hence another cause for the constant diminution of the quantity of this compound—in addition to those already detailed in the preceding section.

But, besides the portion of this nitric acid which owes its existence to the decomposition of ammonia, much—by far the greatest portion, in all probability—derives its origin from the union of the elements of the atmosphere itself. This direct union is effected in the air, as has been already shown by the agency of atmospheric electricity; but it also takes place in the soil during the oxidation of the other elements contained in the organic matters which are there undergoing decay. The combination of the elements of ammonia in such circumstances proceeds on the principle—that bodies, themselves undergoing oxidation, dispose other substances in contact with them (in this instance the nitrogen of the air) to unite with oxygen also. The presence of lime, potash, &c., in the soil, further induces to this oxidation, by the tendency of these substances to combine with the acid, which is formed by this union of the elements of which nitric acid consists.

It is impossible precisely to estimate the quantity of nitric acid produced in these various ways, through these various agents, and in these varied circumstances; or to balance it accurately against the amount of ammonia continually reproduced, as we have seen, in nature, wherever the necessary conditions present themselves. But, as I formerly concluded, that the amount of nitric acid actually existing in the superficial deposits of our globe is greater than that of ammonia, so I think that, in regard to the reproduction also of these two compounds, the balance is in favor of the former.

Since, then, nitric acid is fitted by the solubility of its compounds to enter into the circulation of plants in any quantity—since, when applied to them, it does undoubtedly promote, in a remarkable degree, the growth of plants—and since, in nature, it is continually reproduced in every country, and under such varied circumstances—I cannot withhold myself from the conclusion, that, over the general vegetation of the globe, it holds with ammonia at least an equal sway, and is appointed to exercise at least an equal influence over the growth of plants, both in their natural and in their cultivated state.

Still the influence of each is not unvaried by locality or by climate. The extent of dominion exercised by the nitrates probably diminishes as

we recede from the equator, while that of ammonia increases—it may be in an equal proportion.

#### BONES—BONE DUST—CRUSHED BONES.

From the New England Farmer.

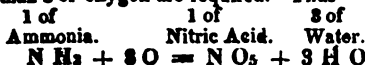
Our pages have contained for the last few weeks, more articles upon bone manure than any other topic. The reason of this is simply a conviction that this means of enriching the soil is not sufficiently regarded. Having made use of crushed bones for various crops, and applied them under various circumstances, and this not in one year only, but in 1838, '39 and '41; and having seen their effects not upon the first crop merely, but upon two and three subsequent ones, we set a high value upon them. It is our intention to use them more extensively the next season than we have done before, and for the single reason, that when we sit down and with pencil and paper figure up cost and efficacy, we find this a cheaper manure than any other that we can buy.

The results of our experiments have in part been made public in the Transactions of the Essex Agricultural Society for 1838, and in the back numbers of the N. E. Farmer. There is no occasion to repeat them here. Our purpose in this article is not so much to prove their worth, as to give some cautions and directions in regard to the use of them, and suggest a mode by which the farmer may turn to good account those which he is daily removing from his table, or which he obtains from the heads and legs of the animals which he slaughters, or may get from such animals as he loses by death.

In England forty and fifty bushels of crushed bone are applied to an acre. But it is unsafe for us to follow their example. Their climate is vastly more moist than ours, and their cultivated soil is generally much heavier. Heating manures may profitably be applied by them in quantities which would burn up the crop in our summers. Bones are obviously very heating; and we are satisfied that where they have been used in this vicinity, the quantity applied has been too great. We shall not in future use more than twenty bushels upon an acre, and generally shall use much less than that. They must be used as aids to common manures, and to muck and sand. And that their influences upon the muck and upon the silex in the sand may be fairly brought out, ashes or the lie of ashes should be one of the ingredients in the compost heap. Let them be well fermented, and then apply them sparingly. The fermentation, however, is not designed to make the bones themselves directly act with more power upon the soil; but it is to weaken them by making them give out a portion of their fertilizing properties to the muck, or soil, or sand with which they are mixed, and thus enable you to spread the bone in a diluted state.

Such bones as are usually ground have previously been boiled, and as much of the oily and gelatinous matter has been taken from them as boiling can remove. One might at first imagine that bones thus treated would be found of but little value. The matters extracted by the soapboiler are unquestionably good fertilizers, but the phosphate of lime is the property in the bone that constitutes its greatest value as a manure—and this

\* For the perfect oxidation of 1 of ammonia no less than 8 of oxygen are required. Thus—





the boiling does not remove. Experiments in Europe have shown that the difference in effect upon the soil between those that have been boiled and those that have not is very small.

In England they are found useful, particularly on light soils. Some friends, whose eyes have gazed upon fields of old England, tell us that light soils there might be called heavy here. Consequently bones may be found beneficial with us upon the greater portion of the land that we cultivate. Experiment alone can determine.

How can farmers turn unbroken bones to good account? In one of the back numbers of our paper is an article from one who subscribes himself "A Mechanic," which gave us a valuable suggestion, and which may be acted upon by every family. According to our recollection this mechanic remembered that his mother, when she made soap, put bones in the leach—and that the action of the ashes softened and almost consumed the bones. Might not a tight box or tub be procured which might be set in the ground, into which bones, and ashes, and water could be put from time to time, and thus the bones be eaten up. If so, and we believe they might, then the two or three bushels of matter that could be taken from this tub once or twice a year, would be found an exceedingly valuable addition to a compost heap of 20 or 30 loads. Two bushels of bones thus digested would probably furnish as much phosphate of lime as the ruta bagas on an acre of land would require; and this crop requires more than any other.

#### ON SAVING LIQUID MANURE.

By Mr. Matthew Marmaduke Milburn, Thorpefield, Thirsk, Yorkshire.

It is an unaccountable circumstance, that while many thousands of pounds are yearly expended by the agriculturists of Great Britain in the purchase of artificial and extraneous manures, so little attention is paid to the collecting, preparing, and using of that which is always within their reach. There can be little doubt, that, in one shape or another, as much available manure is actually wasted and lost, as would have, if applied to the land, have an effect equal to the whole of the lime, bones, rape-dust, &c., which are annually purchased.

With very few exceptions, the generality of farmers allow the whole of the urine made by their stock, the drainage of the fold-yards, and the liquid from the mixens, [dung-hills,] to run down some sewer and enrich the rank grass and weeds which it approaches, or run into some distant river.

The writer of this report had his attention directed to the utility of liquid manure from the following circumstance:—The liquid from the fold-yard—which by the way was originally a quadrangular court-yard, is entirely paved, and lies rather high—ran for several years down an open drain belonging to an adjoining neighbor. For a considerable period the sewer was not cleaned out, and in consequence of the yard-drains being partly blocked up, permission was asked to clean out the sewer. The contents, after being allowed to dry, were put upon a light, poor, sandy soil, as

a dressing for autumnal sown tares. The consequence was, that though the soil had grown, comparatively, nothing for a long time, such a crop of tares was obtained as is seldom witnessed. The same piece was sown with tares the following year,—contrary, it will perhaps be said, to good farming,—and another beautiful crop was obtained. Indeed the power of the sewer clearings seemed to be double that of fermented farm-yard manure; and peculiarly adapted to promote the full development and vigorous vegetation of the plants.

The next object of the writer was to save a portion at least of this fertilizing mixture, and he determined upon the construction of a tank to collect a manure so valuable. There were one or two slight difficulties to encounter,—first the situation of the farmstead was a dead level, and continued to be so for several hundred yards from the premises; and, in the next place, the soil and subsoil were exceedingly porous, and at some depth springy. These difficulties were, however, overcome, and a full year's experience of the effects of the application has been had.

In order to methodize, he will treat separately of the nature of the liquid manure, of the mode of its application, of the effects produced, and of the construction of tanks and other receptacles for saving it.

The liquid manure which the writer has applied consists of the drainage from the cow-house, calf-house, pig-cot, and fold-yard. Grates are placed in the different places whence it is derived, and under-drains to convey the liquor to the tank. The cows are principally store animals, fed on turnips, with a little hay at night; the calves are fed on turnips, linseed-cake, or porridge and hay; the pigs are fattening ones, fed principally on barley-meal; and the fold-yard has in it the dung from every kind of stock: besides, a few store cattle and pigs are kept in it. The dung is mixed indiscriminately, and remains a few weeks previously to its being carted to the mixen. The fold-yard is open to the weather, and as the ham-mels and some of the farm-buildings are not spouted, a great quantity of the soluble parts of the dung and decomposed straw passes off with the drainage. The writer is not sure whether this is as rich as the urine and such parts of the dung as it carries in solution from the interior of the buildings; but it is a valuable manure which would otherwise be lost, and, were it not in any way applied to the land, would be entirely wasted. Complaints have been made of the close drains stopping up with residuum. Mine are perfectly open. Stopping arises either from the under drains not having sufficient fall, or from the tank not being emptied as soon as it is full.

In a dry season, of course, less drainage proceeds from the fold-yard, but it makes no difference as respects the drainage from the buildings; and in the latter case the fermentation of the liquid manure proceeds much more rapidly than when there is more drainage from the fold-yard.

When the temperature is not too low, a white creamy fluid covers the surface of the liquor in the tank, and a black sediment subsides to the bottom. This indicates the incipient fermentation of the liquid, and adds much to its efficacy.

When the quantity of rain which falls is very great, the tank is soon filled; and of course must

be emptied before it can have undergone any fermentative process. The urine in such case is perfectly raw, but it is so much diluted by the excess of water as to counteract any injurious effects upon the crop to which it is applied. Although there can be no doubt that, in its fermentative state, the liquor is much more concentrated and powerful in its effects, still, as urine contains food for plants in a state of solution, and, when sufficiently diluted, is of great service, from my own experience it seems to be necessary to apply it in much greater quantities when unfermented to produce the same effects upon the crop.

Unfortunately from its position the reporter is unable to collect the urine of the horses; this is a great disadvantage, as the ammonia which the urine of horses contains would tend very materially to excite fermentation in the mass, which, as it is, contains too much of the excrements of colder animals readily to ferment.\*

The liquid in summer is somewhat different in its character from that made in winter; it depends entirely upon the drainage from the fold-yard, the washings, it may be called, of manure gone through the first stage of fermentation; but the height of the temperature induces fermentation rapidly; it becomes speedily putrescent; the black residuum is even more liberally deposited than in winter, as well as a green vegetable mucus suspended in the body of the tank.

At the commencement of the application of the liquid manure, the writer was anxious not to expend a large sum on the instruments for removing the liquor, at least until he was satisfied of its practical utility in increasing productiveness. His method of removing it was indeed a primitive one, and one which required a great deal of time, and caused some inconvenience. The liquid was baled out of the tank by pails, to which cords were attached, and conveyed to the field in two large tubs in a cart, and again baled from these and spread upon the land. So satisfied is he now, however, as to the value of the plan, that he has had a water-cart constructed, on a very simple and inexpensive plan, viz., a large pipe fixed on a pair of low wheels and axletree, to which a pair of shafts are attached. A large hole is made in the top of the cart to pour in the liquid, another at the end, which is closed with a plug; to this a perforated oblong box may be attached, which spreads the liquid as the horse proceeds, and removes any unpleasant effects to which the former rather primitive plan is necessarily liable. A wooden pump with a leathern tube attached might be added to raise the liquid from the tank into the water-cart.

The writer has used the liquid manure, hitherto, invariably in dressing grass land, and from November till April. Since the last-named period the liquid has been poured upon a compost-heap consisting of quitch roots, and some very imperfectly made manure, which plan he prefers to the burning of the quitch. A fine rich compost is made, which he intends also to lay upon the grass land. He was deterred from applying the liquid manure to the grass in the summer season, from the idea that it might, in hot weather, destroy the

vegetative power of the grass, or, under any circumstances, render it so unpalatable to the stock as to prevent their eating it.

In detailing the results of its application, the writer conceives he cannot do it more simply than by stating the facts of the experiments he has himself conducted. Almost immediately after the tank was made a very heavy thunder-storm, preceding a long succession of heavy rains, occurred; the consequence was, that having then very little stock in the houses, and little manure in the fold-yard, the tank was shortly full of colored water,—of rain-water very slightly impregnated with decomposed or excrementitious matter. The tank was necessarily at once emptied, and its contents poured on a pasture growing very indifferent herbage; the soil sandy, with a slight mixture of undecomposed vegetable matter; subsoil a sharp yellow and gray sand, impregnated with oxide of iron. Up to the present time (Sept. 11, 1840,) I can perceive no difference between the part of the field where the liquid manure was poured and the part without any application. This experiment was made about the first of November; the quantity laid on was about 800 to 1200 gallons per acre. The same quantity, as nearly as can be estimated, was applied in every experiment made.

The second experiment was also tried on a pasture, soil sandy, subsoil sandy gravel, and perfectly dry though undrained. Two-thirds of the field were manured with rotten chaff, mixed with horse-litter, and well rotted, in the month of February. The remaining third was watered with the tank liquor, now consisting of the drainage from the whole of the stock as stated above in the months of December and January. The spring appearance of the grass was altogether in favor of the part manured with the liquid manure, both in the deepness of its green, in its tallness, and in its thickness upon the ground. The field was depastured with milch-cows, and as soon as they were turned upon it, they eat up the grass where the liquid had been applied long before the other was comparatively touched, and have maintained a decided preference to it up to the present time; it is close and even as a lawn, while in some parts of the field the grass is quite neglected. From this the writer infers, that some principle has been supplied to the grasses on this piece much more favorable to the development of their characteristic qualities than on the remainder of the field, animals always choosing such plants as are in the greatest perfection: he has no doubt, that, had the whole of the grass been cut, a most decided superiority would have been manifested on the piece watered with the tank-liquor.

The next experiment was made on a meadow. The liquid was applied in February; it had fermented, and black residuum had formed very liberally. Part of the field was manured with a rich mixture of ashes and night-soil; the remainder no manure whatever; soil, a cold gray sand; subsoil, adhesive silt, rather spongy, and not efficiently drained. The precise spot where the liquid manure had been applied could be marked to a yard up to the time of mowing, and the grass was equally good with that manured with the ashes and night-soil. Indeed it had so overgrown, that the bog was spoiled by over-luxuriance.

\* The addition of so much as could be collected of the human urine and excrements of the farm would be still more valuable.—Ed. F. R.

The last experiment was on a sandy soil, where potatoes and Swede turnips had been soddereed up to the 13th of May. The grass was eaten very close, and on a light burning sand little cut of grass could be expected after that period. Part was watered with the liquid manure. That part where it was applied soon gave out a rich luxuriant herbage, and contained three times as much grass as any other part of the field. It is refused, however, by the stock, being probably applied too late, some of the effluvia possibly is still detected by the animals.

Perhaps the writer may mention, that a relative of his has a deep well in the middle of his fold-yard, which is now a kind of receptacle for a portion of the drainage; this he empties when the manure is removed, and spreads it over a paddock, which he mows every year for soiling his draught-horses; it gives perhaps three times as much grass as any other part of his farm of an equal extent. The soil is a cold retentive clay.

The construction of tanks is the next important question. That of the writer is "a brick in length" in walling, plastered with Roman cement, and flagged over the top, one of the flags being movable; the drains into it are all covered, and no stranger could be conscious of its existence. In some situations, with natural falls, &c., it might be built upon the surface, and the liquid allowed to pass through open drains, clayed and puddled. As the former is the most efficient and commodious method, the writer will give an estimate, for cutting, walling, plastering, and covering a tank of the following dimensions, viz.:—

	Feet	inches.	
Length (within,)	13	6	
Width,	6	6	
Depth,	6	0 = 19½	cub. yds.
Cutting at 3d. per cubic yard (over all,)			£0 7 6
Walling, including brick and mortar, 4s.,			6 8 0
Plastering and cement,			0 16 0
Covering and flags,			2 15 0
			£10 6 6

This would be a tank sufficiently capacious for a farm of 150 to 200 acres.

Receptacles of a more simple and inexpensive nature might be constructed, which would answer some of the ends of a more complete tank. A pond in a suitable situation might be adapted to the purpose; it, would, however, be subjected to excessive dilutions, so much so as to weaken the manure and very materially increase the expense of cartage, with less actual benefit to the land.

A tank might be made under a shed, and composed of walls of clay, and covered with slabs of boarding, or any refuse boarding. The expense of such a receptacle would be somewhere as under, dimensions as in the preceding case, viz.:—

Cutting at 3d per yard,	£0 7 6
Clay and carting	0 14 0
Board and covering	0 5 0
	£1 6 6

It would, however, be subject to suffer in frosty weather, as well as in extreme drought, and would be liable to be perforated by worms.

For very small farms, or for the allotments or gardens of cottagers, one or a series of large casks

might be inserted in the ground with a conducting drain or channel over the whole. This might be effected at a very trifling expense, and the advantages resulting from it would be very great. The writer knows an instance of a small receptacle of this kind, where the owner has but one pig; he manages however, by its aid in his garden, to grow astonishing crops, and has garden produce both earlier and superior to most of his neighbors.

From the London Farmers' Magazine.

#### RESULTS FROM GUANO MANURE.

From Mr. Smith, Gunton Park, Norfolk.

Applied 200lbs. to an acre, and on the same field on an equal space of land fifteen bushels of bone dust. Both were drilled into the ground with seed wheat. The bone dust gave four and a half quarters of wheat, the guano six quarters two bushels one and a half pecks.

From Mr. Westcar, Burwood, Surrey.

Had but a few pounds weight, which he applied to five rods of earh; dunged the remainder of the field with the best farm-yard manure, at the rate of eighteen loads to the acre; drilled in barley. Five rods of the dunged part of the field gave thirty-five bushels of barley—the five rods manured with guano gave thirty-nine bushels.

From Mr. Geo. Harriott, North Waltham, Basingstoke.

The small quantity I received I sowed with some barley on the 1st of May last, without ashes or charcoal. The weather was very dry when the guano was used; the barley came up three days sooner than elsewhere, it was much more luxuriant during all the season, and, as well as I could ascertain from so small a quantity, compared with an equal portion of land not sown with guano, the produce was rather more than half as much more corn, and double the quantity of straw. If it had been sown earlier, I am convinced it would have done more good. In the early part of June I dressed about ten perches for Swedes; I mixed the guano with ashes, and drilled in with the seed; on either side I used bone dust; the season was very dry, and continued so for three weeks; the ashes mixed with the bone dust were moist—those with the guano fresh burned and dry, consequently the Swedes dressed with the moist ashes came up a fortnight sooner than those dressed with guano and dry bones; but since the rain vegetation has been very rapid, and guano has quite given the bone dust the go-by. From what I have seen, I have every reason to think it will form a most valuable manure.

It was applied to some barley in Norfolk in 1840, and this year the clover on which it was sown has produced half a ton more than any other part of the field. This is important, as most artificial manures do good for one season only.

From Mr. Love, Shoreham, Sevenoaks.

I beg to inform you I have made trial of the guano, and am happy to add that it has answered my most sanguine expectations. I mixed 14 lbs. in the first instance with two bushels of ashes,

and although the weather was very dry, I could perceive a marked difference in the growth of the plants a few days after they made their appearance. Encouraged by my success, I then mixed 28 lbs. with fifteen bushels of ashes, and applied it for turnips by sowing broadcast on the land, and harrowing it in lightly. As we had frequent showers at the time, the seed soon vegetated, and the plants grew away from those manured with dung and mould. In each case I applied it at the rate of two cwt. to the acre.

*From Messrs. Cormack, son, and Oliver Florists, New Cross, Deptford.*

We have to express our regret that, through the improper conduct of the foreman who was lately in our employ, the guano you have been kind enough to send us has not received a fair trial on our land; but we can bear testimony to its excellence when applied to grass and turnip crops, because we have known it to be applied in Lancashire with very marked success, producing a healthy vigor to the appearance of vegetation, peculiar to itself. With Italian rye-grass it has proved itself very efficacious, and on the whole we believe it to be a very valuable manure.

*From Mr. John Crane Nott, Hallow, Worcestershire.*

*Trial on hops.*—I have much pleasure in bearing testimony to the beneficial effects of the guano manure you were good enough to send me. I applied it to my hop grounds, and, in order to give it a fair trial, I put about a pint to every alternate hill in every row. The effect was most extraordinary; those hills on which the guano was applied were most luxuriant, while the adjoining ones, not so manured, were sickly and weak.

My neighbor, Mr. John Winnell, of Braces Leigh, speaks most favorably of the trial he made upon artificial grasses and hops, on both of which it had a most beneficial effect. I feel confident if the guano can be bought at a moderate price, it will be the most valuable manure we ever had.

*From Mr. Wm. Sim, Drummond, Scotland.*

It gives me much pleasure to add my testimony to that of other farmers, of the value of the manure you inform me is called guano.

As far as this season has gone, it has the superiority over nitrate and bone dust. I applied ten bushels of bone dust, one cwt. of nitrate of soda, and 70lbs. of guano (being at the rate of two cwt. to the acre). Sown in ridges, it has produced more luxuriance than either.

From the experiments more lately made, it appears that the best mode of applying guano is to mix 2 cwt. with 4 or 5 bushels of bone dust, as the supply for one acre of wheat, barley, or oats.

Mr. Smith, whose experiment is mentioned among the foregoing, and whose reputation as a farmer adds weight to any opinion he may express, states that he considers the effect of this mixture as far surpassing any other he has seen; but I would not dispense with the charcoal, from which the same benefit will be always derived.

There is an advantage in guano, that, use it in almost any way, its component parts are so essentially manures that they must be absorbed by the

growing plants, and assist by adding vigor to their life; and if a farmer should prefer other means of applying it to his land than that which I have mentioned, he can scarcely go wrong in making trial of his plan.

I may add turnips to the crops benefited by bone dust and guano together; but for green crops in general, charcoal alone will be necessary to mix with it. The great assistance that can be given to manures of this description, is to diffuse them among the roots through the land they are applied to.

A. MACDONALD.

8, Mildred's Court, London, Oct. 26.

#### ON DESTROYING SLUGS.

*From the London Farmers' Magazine.*

*Mr. Editor,*—Permit me, through your widely-circulated journal, to inform my brother farmers of the most expeditious, efficacious, and cheapest method of destroying slugs, when the clover, pea, and bean lands cannot be trodden by sheep, as in this unfavorable season. Provide, fresh from the kiln, sufficient lime, allowing 5 bushels per acre; slack the lime two days before sowing; choose a calm, mild morning; commence sowing early enough to finish before day-light; one man can sow one acre per hour, sowing two yards at a cast. I am, Mr. Editor, yours most respectfully,  
*Harlow, Nov. 6. H. C. WENTWORTH.*

*Sir,*—This has been a most genial season for breeding of slugs; and they are now so numerous, that if they are not destroyed, it can hardly be doubted that they will in the United Kingdom cause a deficiency of from 12 to 1500,000 quarters in the yield of the ensuing wheat crop.

They may be efficiently destroyed by getting a quantity of new lime (old will do, but not so well,) and placing it in some convenient place to slacken six or seven days, against the evenings are moonlight. Then about seven o'clock—not in stormy but mild evenings—let a man (with a boy to lead the horse) take a fair cart-load of the prepared lime, and pass over the corn-field against the wind, and with a small hand-shovel spread it wide and high in the air; and every particle of it will do more or less execution. When the cart has passed over the field it should be taken back to the windward side again, and then take another breadth, and so on till the field is finished. About two bushels of lime well managed will do for an acre, and at the same time kill the greater part of the slugs in the hedges.

The cost and trouble would be compensated by the benefit the plant would derive from such a sweet though slight top-dressing. It will be found that by seven o'clock of mild evenings through this month and the next, the whole fraternity will be unhooded, and either crawling or feeding. Slugs are not destroyed by frost, but only kept at home whilst it continues. It will be expedient, in order to get the lime well slackened, to rake the lumps to the outside of the heap, and at times sprinkle them slightly with a watering-pot.

Since writing the above, I have seen an article



in your paper of the 9th on the same subject; but as mine is somewhat different, and as I have had a good deal of experience in destroying slugs, you will perhaps insert it. I am, Sir,

AN OCTOGENARIAN GARDENER.

Romsey, Nov. 11th, 1841.

#### PLAN AND CONSTITUTION OF A WORKING AGRICULTURAL SOCIETY.

We have often, in the course of this publication, expressed a very high estimation of what would be the usefulness and value of agricultural societies, if properly constituted and properly operating; and also our low actual estimate of the value of nearly all the agricultural societies existing in Virginia, or of the greater number which have ceased to exist. We shall not here repeat what has been so fully said, and so often adverted to before; but if any reader desires to know more of our views on this subject, he is referred especially to pages 200, vol. i., 705, vol. vi., and 39, vol. viii. It is enough here to say generally, that the radical defect of all known agricultural societies is that they *do not work* to forward their designated end—but merely utter and hear formal speeches and addresses, which, from the very nature of the case, are necessarily too general in their scope to present much of particular facts, or to be of any particular value.

For an agricultural society to be truly and greatly useful, its main operation ought to be to induce the making and reporting of as many as possible of accurate experiments in practical agriculture. This is a service which any person of ordinary intelligence can perform, who will give merely a little time and trouble for the purpose. If only some one trivial but useful fact were established thus by careful experiment and accurate report, by each one of some twenty or thirty members of a society, the mass of knowledge thus elicited and collected in a single year, would be of more value than all the results of all the mere address-making societies that have yet existed. But, of far greater value would be the subsequent and continued results, of as many experiments, or more probably ten times as many, performed by the society every successive year. Extend the view to 50 or 100 similarly working county societies, each producing as many useful truths, and the results of the labors of each society and individual extended, by exchange and publication, to all the others, and the general and certain benefit in diffusion of agricultural knowledge would exceed our present powers of conception, founded on the usual profitless action of agricultural societies. It would be a great system of mu-

tual instruction by experiments and by facts, instead of by loose guessing and looser assertion, without any thing that deserves the name of experimental truths or philosophical investigation.

The Board of Agriculture has recommended the formation of *working* county agricultural societies, and has ordered that the efforts of its members shall be given in aid of that object. We have therefore presumed to submit the foregoing remarks, and shall offer below a form of constitution for a county agricultural society which seems to us likely to direct effort to proper and profitable objects. While no usual or other modes of procedure are forbidden, the proposed constitution requires that a sufficient portion of the duties of the members shall be directed to the only certain mode of obtaining truth—the making and reporting of accurate experiments. In nearly all other respects, the plan is merely one of form or routine, which has no peculiar merit, and may be changed or substituted, perhaps to advantage, by any new society which may approve and adopt the principle and the essential part of the plan. We have thought it best, however, to submit a draught of an entire constitution, as it may at least serve as a ground-work for amendment, and thereby save some trouble in forming a new society.—E. D. F. R.

#### *Proposed plan of Constitution.*

The Agricultural Society of ——— is instituted for the purpose of promoting the improvement of agriculture, and especially to seek that end by inducing the making and reporting of careful and accurate experiments, for ascertaining doubtful, disputed, or new and useful facts in scientific or practical agriculture.

1. The society shall be composed of such persons as shall sign this constitution, and pay such contributions as may be required by its provisions.

2. The society shall have one general meeting in each year, which, until altered, shall be held at ———, on the — of ——— and such special meetings as may be called by proper authority.

3. The officers shall be a president, secretary, and treasurer, and four other members of the executive committee, the three former being members *ex officio* of that committee; all to be elected by the annual general meeting, and to serve for one year, or until another election shall be made.

4. It shall be within the power and duty of the executive committee to order all things properly in furtherance of the objects of the society, and within its means; *provided* that such action of the executive committee shall not extend to cases provided for by the vote and action of the society, and shall never oppose any action or resolution of the society.

5. The president, secretary, and treasurer shall have the powers and perform the several duties implied by the names of their offices, and both for the society and for the executive committee, of which they are members *ex officio*.

6. No person shall be elected president of the society two years in succession.

7. Each person on becoming a member shall pay to the treasurer an admission fee of \$2, and at each annual meeting of the society thereafter the further annual contribution of \$1.

8. Besides any other discretionary or voluntary services, it shall be the duty of each member of the society annually to commence, and attempt to complete, at least three experiments on some one or more subjects of practical agriculture, on some doubtful or disputed questions, and designed to throw light thereon; which experiments shall be conducted carefully and accurately, to the best of the ability and the means of the experimenter, and the circumstances noted minutely, and with the results be reported in writing, as simply and concisely as may be, but minutely and fully, at the next annual meeting—and whether the result be deemed successful and valuable, or discouraging, or the whole experiment be deemed a failure. And in default of such reports either of progress or of completion, of three experiments by each member, at each annual meeting, the defaulter shall pay to the treasurer \$1 for each experiment wanting.

9. The executive committee shall prepare a list of practical agricultural matters deemed questionable, and important to be investigated by the experiments of members of the society, from which, or from other sources, each member may choose subjects for experiment. And the experiments of members shall be arranged and condensed by the executive committee, and the facts shown by the results published in the manner deemed most suitable.

10. Of the funds of the society not less than one half of the whole amount shall be appropriated as premiums offered for careful and well conducted experiments on subjects of practical agriculture.

11. The society will co-operate with each and every other society having similar objects and general action, for the purpose of better forwarding

their common and important object of inducing accurate investigation, eliciting useful facts, and exchanging and diffusing the knowledge thus acquired.

#### NOTICE IN REGARD TO COMMUNICATIONS FOR THE STATE BOARD OF AGRICULTURE.

"Resolved, That all reports and communications to the Board of Agriculture be sent through the Corresponding Secretary; and that the Secretary be authorized and requested to select such portions or extracts as he may deem proper for the purpose, and cause them to be published in the Farmers' Register, in advance of the future meeting, or of any further order of the Board."

Extract from the minutes,

EDMUND RUFFIN,  
Corresponding Secretary.

#### THE SOUTHERN MAGAZINE ABANDONED.

The attempt to carry on the publication of the Southern Magazine has been abandoned as hopeless of remuneration, and the money received for subscriptions will be returned—except where the same individual is also a subscriber to the Farmers' Register, in which case his credit for payment will be extended for the latter publication.

The two monthly numbers of the Southern Magazine, which have been thus issued at the sole cost of the publishers, will be sent as a present to all the paying subscribers of the Farmers' Register. It is hoped that they will be deemed worth acceptance and preservation.

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THE  
WESTOVER MANUSCRIPTS:

CONTAINING  
THE HISTORY OF THE DIVIDING LINE

BETWIXT VIRGINIA AND NORTH CAROLINA ;

A JOURNEY TO THE LAND OF EDEN, A. D. 1733 ;

AND  
A PROGRESS TO THE MINES.

WRITTEN FROM 1728 TO 1736, AND NOW FIRST PUBLISHED.

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BY WILLIAM BYRD,  
OF WESTOVER.

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PETERSBURG:  
PRINTED BY EDMUND AND JULIAN C. RUFFIN.

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1841.

**ENTERED, according to act of congress, in the year 1841, by EDMUND RUFFIN, in the  
Clerk's office of the District Court of the Eastern District of Virginia.**

## EDITOR'S PREFACE.

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THE manuscripts of Col. William Byrd, of Westover, the father of the last proprietor of the same name, of different dates from 1728 to 1736, are contained in a large folio volume bound in parchment, which has been carefully preserved in his family, until recently placed in the hands of the editor. The whole is in the hand-writing of a copyist, but written evidently under the immediate direction of its author, as there are numerous corrections, interlineations, and more considerable additions, in his own hand-writing. The book was doubtless copied exactly from the author's earliest draught on loose sheets, which were afterwards destroyed, as useless. At any rate, this old volume is the only copy in existence. The Historical Society of Virginia obtained the consent of the proprietor of the manuscripts to have them copied, with a view to publication. But the operations of that society ceased before the publication had been commenced, and when only one of the several manuscripts had been copied. It was one of the latest acts of the last proprietor, George E. Harrison, Esq., of Brandon, to place at our disposal this highly valued work of his distinguished and talented ancestor, with permission to publish any portion, or the whole of the contents, provided the manuscript volume itself should be preserved uninjured, and afterwards restored to the owner. The better to secure the latter object, the copy of the part made for the use of the Historical Society, has also been placed in our hands by the directors.

The manuscripts offer abundant internal evidence that they were written merely for the amusement of the author, and for the perusal of his family and friends, and not with any view to their being printed. This adds much to their other and important value. For there prevails throughout, as in the private letters of an accomplished writer, a carelessness in the mode of expression, and a manifest freedom from all restraint, which together serve to render subjects pleasing and interesting, that, however worthy of consideration, would be dry and tedious if the writer had sought for the applause, or feared the censure, of the reading public. The author was a man "too proud to be vain," and who neither cared for, nor thought of seeking, public applause for his writings. The influence of that first feeling, and its results, naturally operated on his children and later descendants, to deter them also from publishing the manuscripts; and this course, besides being in conformity with the writer's intention, was perhaps deemed the more proper, because of his great freedom of expression, and of censure, often tinged by his strong "church and state" principles and prejudices, and which might have given offence to some of the individuals or classes who were the subjects of his free remarks. But at this late time, there no longer remains, if there existed before, any reason for withholding these interesting writings from the public. And there is no free expression of even the prejudiced and erroneous opinions of the writer, which, to an intelligent and liberal-minded reader, would now give offence. Col. Byrd was a true and worthy inheritor of the opinions and feelings of the old cavaliers of Virginia; and it is because from such a source, as well as being designed at first as private and confidential, that his writings should be now considered.

Col. William Byrd died where he had long lived, at his then beautifully decorated and princely mansion, Westover, on the north bank of James river; and which even at this late day exhibits admirable remains of his taste, and his magnificent scale of expenditure for its gratification. His body was buried in the garden, and his grave is covered by a monument of white marble, on which is the following inscription:

[ON THE NORTH SIDE.]

Here lieth  
 The Honorable William Byrd, Esq.,  
 Being born to one of the amplest fortunes in this country,  
 He was sent early to England for his education;  
 Where, under the care and direction of Sir Robert Southwell,  
 And ever favoured with his particular instructions,  
 He made a happy proficiency in polite and various learning.  
 By the means of the same noble friend,  
 He was introduced to the acquaintance of many of the first persons of that age  
 For knowledge, wit, virtue, birth, or high station,  
 And particularly contracted a most intimate and bosom friendship  
 With the learned and illustrious Charles Boyle, Earl of Orrery.  
 He was called to the bar in the Middle Temple,  
 Studied for some time in the Low Countries,  
 Visited the court of France,  
 And was chosen Fellow of the Royal Society.

[ON THE SOUTH SIDE.]

Thus eminently fitted for the service and ornament of his country,  
 He was made receiver general of his majesty's revenues here,  
 Was thrice appointed public agent to the court and ministry of England,  
 And being thirty-seven years a member,  
 At last became president of the council of this colony.  
 To all this were added a great elegancy of taste and life,  
 The well-bred gentleman and polite companion,  
 The splendid economist and prudent father of a family,  
 With the constant enemy of all exorbitant power,  
 And hearty friend to the liberties of his country.  
 Nat. Mar. 28, 1674. Mort. Aug. 26, 1744. An. ætat. 70.

# HISTORY

## OF

# THE DIVIDING LINE:

RUN IN THE YEAR 1723.

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BEFORE I enter upon the journal of the line between Virginia and North Carolina, it will be necessary to clear the way to it, by showing how the other British colonies on the Main have, one after another, been carved out of Virginia, by grants from his majesty's royal predecessors. All that part of the northern American continent now under the dominion of the king of Great Britain, and stretching quite as far as the cape of Florida, went at first under the general name of Virginia.

The only distinction, in those early days, was, that all the coast to the southward of Chesapeake bay was called South Virginia, and all to the northward of it, North Virginia.

The first settlement of this fine country was owing to that great ornament of the British nation, sir Walter Raleigh, who obtained a grant thereof from queen Elizabeth of ever-glorious memory, by letters patent, dated March the 25th, 1584.

But whether that gentleman ever made a voyage thither himself is uncertain; because those who have favoured the public with an account of his life mention nothing of it. However, thus much may be depended on, that sir Walter invited sundry persons of distinction to share in his charter, and join their purses with his in the laudable project of fitting out a colony to Virginia.

Accordingly, two ships were sent away that very year, under the command of his good friends Amidas and Barlow, to take possession of the country in the name of his royal mistress, the queen of England.

These worthy commanders, for the advantage of the trade winds, shaped their course first to the Charibbe islands, thence stretching away by the gulf of Florida, dropped anchor not far from Roanoke inlet. They ventured ashore near that place upon an island now called Colleton island, where they set up the arms of England, and claimed the adjacent country in right of their sovereign lady, the queen; and this ceremony being duly performed, they kindly invited the neighbouring Indians to traffick with them.

These poor people at first approached the English with great caution, having heard much of the treachery of the Spaniards, and not knowing but these strangers might be as treacherous as they. But, at length, discovering a kind of good nature in their looks, they ventured to draw near, and barter their skins and furs for the bawbles and trinkets of the English.

These first adventurers made a very profitable voyage, raising at least a thousand per cent. upon their cargo. Amongst other Indian commodities,



they brought over some of that bewitching vegetable, tobacco. And this being the first that ever came to England, sir Walter thought he could do no less than make a present of some of the brightest of it to his royal mistress, for her own smoking. The queen graciously accepted of it, but finding her stomach sicken after two or three whiffs, it was presently whispered by the earl of Leicester's faction, that sir Walter had certainly poisoned her. But her majesty soon recovering her disorder, obliged the countess of Nottingham and all her maids to smoke a whole pipe out amongst them.

As it happened some ages before to be the fashion to saunter to the Holy Land, and go upon other Quixote adventures, so it was now grown the humour to take a trip to America. The Spaniards had lately discovered rich mines in their part of the West Indies, which made their maritime neighbours eager to do so too. This modish frenzy being still more inflamed by the charming account given of Virginia, by the first adventurers, made many fond of removing to such a paradise.

Happy was he, and still happier she, that could get themselves transported, fondly expecting their coarsest utensils, in that happy place, would be of massy silver.

This made it easy for the company to procure as many volunteers as they wanted for their new colony; but, like most other undertakers who have no assistance from the public, they starved the design by too much frugality; for, unwilling to launch out at first into too much expense, they shipped off but few people at a time, and those but scantily provided. The adventurers were, besides, idle and extravagant, and expected they might live without work in so plentiful a country.

These wretches were set ashore not far from Roanoke inlet, but by some fatal disagreement, or laziness, were either starved or cut to pieces by the Indians.

Several repeated misadventures of this kind did, for some time, allay the itch of sailing to this new world; but the distemper broke out again about the year 1606. Then it happened that the earl of Southampton and several other persons, eminent for their quality and estates, were invited into the company, who applied themselves once more to people the then almost abandoned colony. For this purpose they embarked about a hundred men, most of them reprobates of good families, and related to some of the company, who were men of quality and fortune.

The ships that carried them made a shift to find a more direct way to Virginia, and ventured through the capes into the bay of Chesapeake. The same night they came to an anchor at the mouth of Powhatan, the same as James river, where they built a small fort at a place called Point Comfort.

This settlement stood its ground from that time forward in spite of all the blunders and disagreement of the first adventurers, and the many calamities that befel the colony afterwards.\*

\* The six gentlemen who were first named of the company by the crown, and who were empowered to choose an annual president from among themselves, were always engaged in factions and quarrels, while the rest detested work more than famine. At this rate the colony must have come to nothing, had it not been for the vigilance and bravery of captain Smith, who struck a terror into all the Indians round about. This gentleman took some pains to persuade the men to plant Indian corn, but they looked upon all labour as a curse. They chose rather to depend upon the musty provisions that were sent from England: and when they failed they were forced to take more pains to seek for wild fruits in the woods, than they would have taken in tilling the ground. Besides, this exposed them to be knocked on the head by the Indians, and gave them fluxes into the bargain, which thinned the plantation very much. To supply this mortality, they were reinforced the year following with a greater number of people, amongst which were fewer gentlemen and more labourers, who, however, took care not to kill themselves with work.

These found the first adventurers in a very starving condition, but relieved their wants with the fresh supply they brought with them. From Kiquotah they extended themselves as far as James-town, where, like true Englishmen, they built a church that cost no more than fifty pounds, and a tavern that cost five hundred.

They had now made peace with the Indians, but there was one thing wanting to make that peace lasting. The natives could, by no means, persuade themselves that the English were heartily their friends, so long as they disdained to intermarry with them. And, in earnest, had the English consulted their own security and the good of the colony—had they intended either to civilize or convert these gentiles, they would have brought their stomachs to embrace this prudent alliance.

The Indians are generally tall and well-proportioned, which may make full amends for the darkness of their complexions. Add to this, that they are healthy and strong, with constitutions untainted by lewdness, and not enfeebled by luxury. Besides, morals and all considered, I cannot think the Indians were much greater heathens than the first adventurers, who, had they been good Christians, would have had the charity to take this only method of converting the natives to Christianity. For, after all that can be said, a sprightly lover is the most prevailing missionary that can be sent amongst these, or any other infidels.

Besides, the poor Indians would have had less reason to complain that the English took away their land, if they had received it by way of portion with their daughters. Had such affinities been contracted in the beginning, how much bloodshed had been prevented, and how populous would the country have been, and, consequently, how considerable? Nor would the shade of the skin have been any reproach at this day; for if a Moor may be washed white in three generations, surely an Indian might have been blanched in two.

The French, for their parts, have not been so squeamish in Canada, who upon trial find abundance of attraction in the Indians. Their late grand monarch thought it not below even the dignity of a Frenchman to become one flesh with this people, and therefore ordered 100 livres for any of his subjects, man or woman, that would intermarry with a native.

By this piece of policy we find the French interest very much strengthened amongst the savages, and their religion, such as it is, propagated just as far as their love. And I heartily wish this well-concerted scheme does not hereafter give the French an advantage over his majesty's good subjects on the northern continent of America.

About the same time New England was pared off from Virginia by letters patent, bearing date April the 10th, 1608. Several gentlemen of the town and neighborhood of Plymouth obtained this grant, with the lord chief justice Popham at their head.

Their bounds were specified to extend from 38 to 45 degrees of northern latitude, with a breadth of one hundred miles from the sea shore. The first fourteen years, this company encountered many difficulties, and lost many men, though far from being discouraged, they sent over numerous recruits of presbyterians, every year, who for all that, had much ado to stand their ground, with all their fighting and praying.

But about the year 1620, a large swarm of dissenters fled thither from the severities of their stepmother, the church. These saints conceiving the same aversion to the copper complexion of the natives, with that of the first adventurers to Virginia, would, on no terms, contract alliances with them, afraid perhaps, like the Jews of old, lest they might be drawn into idolatry by those strange women.

Whatever disgusted them I cannot say, but this false delicacy creating in the Indians a jealousy that the English were ill affected towards them, was the cause that many of them were cut off, and the rest exposed to various distresses.

This reinforcement was landed not far from cape Cod, where, for their greater security, they built a fort, and near it a small town, which, in honour of the proprietors, was called New Plymouth. But they still had many discouragements to struggle with, though, by being well supported from home, they by degrees triumphed over them all.

Their brethren, after this, flocked over so fast, that in a few years they extended the settlement one hundred miles along the coast, including Rhode Island and Martha's Vineyard.

Thus the colony throve apace, and was thronged with large detachments of independents and presbyterians, who thought themselves persecuted at home.

Though these people may be ridiculed for some pharisaical particularities in their worship and behaviour, yet they were very useful subjects, as being frugal and industrious, giving no scandal or bad example, at least by any open and public vices. By which excellent qualities they had much the advantage of the southern colony, who thought their being members of the established church sufficient to sanctify very loose and profligate morals. For this reason New England improved much faster than Virginia, and in seven or eight years New Plymouth, like Switzerland, seemed too narrow a territory for its inhabitants.

For this reason, several gentlemen of fortune purchased of the company that canton of New England now called Massachusetts colony. And king James confirmed the purchase by his royal charter, dated March the 4th, 1628. In less than two years after, above one thousand of the puritanical sect removed thither with considerable effects, and these were followed by such crowds, that a proclamation was issued in England, forbidding any more of his majesty's subjects to be shipped off. But this had the usual effect of things forbidden, and served only to make the wilful independents flock over the faster. And about this time it was that Messrs. Hampden and Pym, and (some say) Oliver Cromwell, to show how little they valued the king's authority, took a trip to New England.

In the year 1630, the famous city of Boston was built, in a commodious situation for trade and navigation, the same being on a peninsula at the bottom of Massachusetts bay.

This town is now the most considerable of any on the British continent, containing at least 8,000 houses and 40,000 inhabitants. The trade it drives, is very great to Europe, and to every part of the West Indies, having near 1,000 ships and lesser vessels belonging to it.

Although the extent of the Massachusetts colony reached near one hundred and ten miles in length, and half as much in breadth, yet many of its inhabitants, thinking they wanted elbow room, quitted their old seats in the year 1636, and formed two new colonies: that of Connecticut and New Haven. These king Charles II. erected into one government in 1664, and gave them many valuable privileges, and among the rest, that of choosing their own governors. The extent of these united colonies may be about seventy miles long and fifty broad.

Besides these several settlements, there sprang up still another, a little more northerly, called New Hampshire. But that consisting of no more than two counties, and not being in condition to support the charge of a distinct government, was glad to be incorporated with that of Massachusetts, but upon condition, however, of being named in all public acts, for fear of being quite lost and forgotten in the coalition.

In like manner New Plymouth joined itself to Massachusetts, except only Rhode Island, which, though of small extent, got itself erected into a separate government by a charter from king Charles II., soon after the restoration, and continues so to this day.

These governments all continued in possession of their respective rights and privileges till the year 1683, when that of Massachusetts was made void in England by a *quo warranto*.

In consequence of which the king was pleased to name sir Edmund Andros his first governor of that colony. This gentleman, it seems, ruled them with a rod of iron till the revolution, when they laid unhallowed hands upon him, and sent him prisoner to England.

This undutiful proceeding met with an easy forgiveness at that happy juncture. King William and his royal consort were not only pleased to overlook this indignity offered to their governor, but being made sensible how unfairly their charter had been taken away, most graciously granted them a new one.

By this some new franchises were given them, as an equivalent for those of coining money and electing a governor, which were taken away. However, the other colonies of Connecticut and Rhode Island had the luck to remain in possession of their original charters, which to this day have never been called in question.

The next country dismembered from Virginia was New Scotland, claimed by the crown of England in virtue of the first discovery by Sebastian Cabot. By colour of this title, king James I. granted it to sir William Alexander by patent, dated September the 10th, 1621.

But this patentee never sending any colony thither, and the French believing it very convenient for them, obtained a surrender of it from their good friend and ally, king Charles II., by the treaty of Breda. And, to show their gratitude, they stirred up the Indians soon after to annoy their neighbours of New England. Murders happened continually to his majesty's subjects by their means, till sir William Phipps took their town of Port Royal, in the year 1690. But as the English are better at taking than keeping strong places, the French retook it soon, and remained masters of it till 1710, when general Nicholson wrested it, once more, out of their hands.

Afterwards the queen of Great Britain's right to it was recognized and confirmed by the treaty of Utrecht.

Another limb lopped off from Virginia was New York, which the Dutch seized very unfairly, on pretence of having purchased it from captain Hudson, the first discoverer. Nor was their way of taking possession of it a whit more justifiable than their pretended title. Their West India company tampered with some worthy English skippers (who had contracted with a swarm of English dissenters to transport them to Hudson river) by no means to land them there, but to carry them some leagues more northerly.

This Dutch finesse took exactly, and gave the company time soon after to seize Hudson river for themselves. But sir Samuel Argall, then governor of Virginia, understanding how the king's subjects had been abused by these republicans, marched thither with a good force, and obliged them to renounce all pretensions to that country. The worst of it was, the knight depended on their parole to ship themselves for Brazil, but took no measures to make this slippery people as good as their word.

No sooner was the good governor retired, but the honest Dutch began to build forts and strengthen themselves in their ill-gotten possessions; nor did any of the king's liege people take the trouble to drive these intruders thence. The civil war in England, and the confusions it brought forth, allowed no leisure for such distant considerations. Though it is strange that the protector,

who neglected no occasion to mortify the Dutch, did not afterwards call them to account for this breach of faith. However, after the restoration, the king sent a squadron of his ships of war, under the command of sir Robert Carr, and reduced that province to his obedience.

Some time after, his majesty was pleased to grant that country to his royal highness, the duke of York, by letters patent, dated March the 12th, 1664. But to show the modesty of the Dutch to the life, though they had no shadow of right to New York, yet they demanded Surinam, a more valuable country, as an equivalent for it, and our able ministers at that time, had the generosity to give it them.

But what wounded Virginia deepest was the cutting off Maryland from it, by charter from king Charles I. to sir George Calvert, afterwards lord Baltimore, bearing date the 20th of June, 1632. The truth of it is, it begat much speculation in those days, how it came about that a good protestant king should bestow so bountiful a grant upon a zealous Roman catholic. But it is probable it was one fatal instance amongst many other of his majesty's complaisance to the queen.

However that happened, it is certain this province afterwards proved a commodious retreat for persons of that communion. The memory of the gunpowder treason-plot was still fresh in every body's mind, and made England too hot for papists to live in, without danger of being burnt with the pope, every 5th of November; for which reason legions of them transplanted themselves to Maryland in order to be safe, as well from the insolence of the populace as the rigour of the government.

Not only the gunpowder treason, but every other plot, both pretended and real, that has been trumped up in England ever since, has helped to people his lordship's propriety. But what has proved most serviceable to it was the grand rebellion against king Charles I., when every thing that bore the least tokens of popery was sure to be demolished, and every man that professed it was in jeopardy of suffering the same kind of martyrdom the Romish priests do in Sweden.

Soon after the reduction of New York, the duke was pleased to grant out of it all that tract of land included between Hudson and Delaware rivers, to the lord Berkley and sir George Carteret, by deed dated June the 24th, 1664. And when these grantees came to make partition of this territory, his lordship's moiety was called West Jersey, and that to sir George, East Jersey.

But before the date of this grant, the Swedes began to gain footing in part of that country; though, after they saw the fate of New York, they were glad to submit to the king of England, on the easy terms of remaining in their possessions, and rendering a moderate quit-rent. Their posterity continue there to this day, and think their lot cast in a much fairer land than Dalicaria.

The proprietors of New Jersey, finding more trouble than profit in their new dominions, made over their right to several other persons, who obtained a fresh grant from his royal highness, dated March the 14th, 1682.

Several of the grantees, being quakers and anabaptists, failed not to encourage many of their own persuasion to remove to this peaceful region. Amongst them were a swarm of Scots quakers, who were not tolerated to exercise the gifts of the spirit in their own country.

Besides the hopes of being safe from persecution in this retreat, the new proprietors inveigled many over by this tempting account of the country: that it was a place free from those three great scourges of mankind, priests, lawyers, and physicians. Nor did they tell them a word of a lie, for the people were yet too poor to maintain these learned gentlemen, who, every where, love to be well paid for what they do; and, like the Jews, cannot breathe in a climate where nothing is to be gotten.

The Jerseys continued under the government of these proprietors till the year 1702, when they made a formal surrender of the dominion to the queen, reserving however the property of the soil to themselves. So soon as the bounds of New Jersey came to be distinctly laid off, it appeared there was still a narrow slip of land, lying betwixt that colony and Maryland. Of this, William Penn, a man of much worldly wisdom, and some eminence among the quakers, got early notice, and, by the credit he had with the duke of York, obtained a patent for it, dated March the 4th, 1680.

It was a little surprising to some people how a quaker should be so much in the good graces of a popish prince; though, after all, it may be pretty well accounted for. This ingenious person had not been bred a quaker; but, in his earlier days, had been a man of pleasure about the town. He had a beautiful form and very taking address, which made him successful with the ladies, and particularly with a mistress of the duke of Monmouth. By this gentlewoman he had a daughter, who had beauty enough to raise her to be a dutchess, and continued to be a toast full 30 years. But this amour had like to have brought our fine gentleman in danger of a duel, had he not discreetly sheltered himself under this peaceable persuasion. Besides, his father having been a flag-officer in the navy, while the duke of York was lord high admiral, might recommend the son to his favour. This piece of secret history I thought proper to mention, to wipe off the suspicion of his having been popishly inclined.

This gentleman's first grant confined him within pretty narrow bounds, giving him only that portion of land which contains Buckingham, Philadelphia and Chester counties. But to get these bounds a little extended, he pushed his interest still further with his royal highness, and obtained a fresh grant of the three lower counties, called Newcastle, Kent and Sussex, which still remained within the New York patent, and had been luckily left out of the grant of New Jersey. The six counties being thus incorporated, the proprietor dignified the whole with the name of Pennsylvania.

The quakers flocked over to this country in shoals, being averse to go to heaven the same way with the bishops. Amongst them were not a few of good substance, who went vigorously upon every kind of improvement; and thus much I may truly say in their praise, that by diligence and frugality, for which this harmless sect is remarkable, and by having no vices but such as are private, they have in a few years made Pennsylvania a very fine country. The truth is, they have observed exact justice with all the natives that border upon them; they have purchased all their lands from the Indians; and though they paid but a trifle for them, it has procured them the credit of being more righteous than their neighbours. They have likewise had the prudence to treat them kindly upon all occasions, which has saved them from many wars and massacres wherein the other colonies have been indiscreetly involved. The truth of it is, a people whose principles forbid them to draw the carnal sword, were in the right to give no provocation.

Both the French and Spaniards had, in the name of their respective monarchs, long ago taken possession of that part of the northern continent that now goes by the name of Carolina; but finding it produced neither gold nor silver, as they greedily expected, and meeting such returns from the Indians as their own cruelty and treachery deserved, they totally abandoned it. In this deserted condition that country lay for the space of ninety years, till king Charles II., finding it a derelict, granted it away to the earl of Clarendon and others, by his royal charter, dated March the 24th, 1663. The boundary of that grant towards Virginia was a due west line from Luck island, (the same as Colleton island,) lying in 36 degrees of north latitude, quite to the South sea.

But afterwards sir William Berkley, who was one of the grantees and at that time governor of Virginia, finding a territory of 31 miles in breadth between the inhabited part of Virginia and the above-mentioned boundary of Carolina, advised the lord Clarendon of it. And his lordship had interest enough with the king to obtain a second patent to include it, dated June the 30th, 1665.

This last grant describes the bounds between Virginia and Carolina in these words: "To run from the north end of Coratuck inlet, due west to Weyanoke creek, lying within or about the degree of thirty-six and thirty minutes of northern latitude, and from thence west, in a direct line, as far as the South sea." Without question, this boundary was well known at the time the charter was granted, but in a long course of years Weyanoke creek lost its name, so that it became a controversy where it lay. Some ancient persons in Virginia affirmed it was the same with Wicocon, and others again in Carolina were as positive it was Nottoway river.

In the mean time, the people on the frontiers entered for land, and took out patents by guess, either from the king or the lords proprietors. But the crown was like to be the loser by this uncertainty, because the terms both of taking up and seating land were easier much in Carolina. The yearly taxes to the public were likewise there less burthensome, which laid Virginia under a plain disadvantage.

This consideration put that government upon entering into measures with North Carolina, to terminate the dispute, and settle a certain boundary between the two colonies. All the difficulty was, to find out which was truly Weyanoke creek. The difference was too considerable to be given up by either side, there being a territory of fifteen miles betwixt the two streams in controversy.

However, till that matter could be adjusted, it was agreed on both sides, that no lands at all should be granted within the disputed bounds. Virginia observed this agreement punctually, but I am sorry I cannot say the same of North Carolina. The great officers of that province were loath to lose the fees accruing from the grants of land, and so private interest got the better of public spirit; and I wish that were the only place in the world where such politics are fashionable.

All the steps that were taken afterwards in that affair, will best appear by the report of the Virginia commissioners, recited in the order of council given at St. James', March the 1st, 1710, set down in the appendix.

It must be owned, the report of those gentlemen was severe upon the then commissioners of North Carolina, and particularly upon Mr. Moseley. I will not take it upon me to say with how much justice they said so many hard things, though it had been fairer play to have given the parties accused a copy of such representation, that they might have answered what they could for themselves.

But since that was not done, I must beg leave to say thus much in behalf of Mr. Moseley, that he was not much in the wrong to find fault with the quadrant produced by the surveyors of Virginia, because that instrument placed the mouth of Nottoway river in the latitude of 37 degrees; whereas, by an accurate observation made since, it appears to lie in 36° 30' 30", so that there was an error of near 30 minutes, either in the instrument or in those who made use of it.

Besides, it is evident the mouth of Nottoway river agrees much better with the latitude, wherein the Carolina charter supposed Weyanoke creek, (namely, in or about 36° 30') than it does with Wicocon creek, which is about fifteen miles more southerly.

This being manifest, the intention of the king's grant will be pretty exactly



answered, by a due west line drawn from Coratuck inlet to the mouth of Nottoway river, for which reason it is probable that was formerly called Weyanoke creek, and might change its name when the Nottoway Indians came to live upon it, which was since the date of the last Carolina charter.

The lieutenant governor of Virginia, at that time colonel Spotswood, searching into the bottom of this affair, made very equitable proposals to Mr. Eden, at that time governor of North Carolina, in order to put an end to this controversy. These, being formed into preliminaries, were signed by both governors, and transmitted to England, where they had the honour to be ratified by his late majesty and assented to by the lords proprietors of Carolina.

Accordingly an order was sent by the late king to Mr. Gooch, afterwards lieutenant governor of Virginia, to pursue those preliminaries exactly. In obedience thereunto, he was pleased to appoint three of the council of that colony to be commissioners on the part of Virginia, who, in conjunction with others to be named by the governor of North Carolina, were to settle the boundary between the two governments, upon the plan of the above-mentioned articles.

February, 1728. Two experienced surveyors were at the same time directed to wait upon the commissioners, Mr. Mayo, who made the accurate map of Barbadoes, and Mr. Irvin, the mathematic professor of William and Mary College. And because a good number of men were to go upon this expedition, a chaplain was appointed to attend them, and the rather because the people on the frontiers of North Carolina, who have no minister near them, might have an opportunity to get themselves and their children baptized.

Of these proceedings on our part, immediate notice was sent to sir Richard Everard, governor of North Carolina, who was desired to name commissioners for that province, to meet those of Virginia at Coratuck inlet the spring following. Accordingly he appointed four members of the council of that province to take care of the interests of the lords proprietors. Of these, Mr. Moseley was to serve in a double capacity, both as commissioner and surveyor. For that reason there was but one other surveyor from thence, Mr. Swan. All the persons being thus agreed upon, they settled the time of meeting to be at Coratuck, March the 5th, 1728.

In the mean time, the requisite preparations were made for so long and tiresome a journey; and because there was much work to be done ~~and some~~ danger from the Indians, in the uninhabited part of the country, it was necessary to provide a competent number of men. Accordingly, seventeen able hands were listed on the part of Virginia, who were most of them Indian traders and expert woodsmen.

Feb. 27th. These good men were ordered to come armed with a musket and a tomahawk, or large hatchet, and provided with a sufficient quantity of ammunition. They likewise brought provisions of their own for ten days, after which time they were to be furnished by the government. Their march was appointed to be on the 27th of February, on which day one of the commissioners met them at their rendezvous, and proceeded with them as far as colonel Allen's. This gentleman is a great economist, and skilled in all the arts of living well at an easy expense.

28th. They proceeded in good order through Surry county, as far as the widow Allen's, who had copied Solomon's complete housewife exactly. At this gentlewoman's house, the other two commissioners had appointed to join them, but were detained by some accident at Williamsburg, longer than their appointment.

29th. They pursued their march through the Isle of Wight, and observed a most dreadful havoc made by a late hurricane, which happened in August, 1726. The violence of it had not reached above a quarter of a mile in

breadth, but within that compass had levelled all before it. Both trees and houses were laid flat on the ground, and several things hurled to an incredible distance. It is happy such violent gusts are confined to so narrow a channel, because they carry desolation wherever they go. In the evening they reached Mr. Godwin's, on the south branch of Nansemond river, where they were treated with abundance of primitive hospitality.

March 1st. This gentleman was so kind as to shorten their journey, by setting them over the river. They coasted the north-east side of the Dismal for several miles together, and found all the grounds bordering upon it very full of sloughs. The trees that grew near it looked very reverend, with the long moss that hung dangling from their branches. Both cattle and horses eat this moss greedily in winter when other provender is scarce, though it is apt to scour them at first. In that moist soil too grew abundance of that kind of myrtle which bears the candle-berries. There was likewise, here and there, a gall bush, which is a beautiful evergreen, and may be cut into any shape. It derives its name from its berries turning water black, like the galls of an oak. When this shrub is transplanted into gardens, it will not thrive without frequent watering.

The two other commissioners came up with them just at their journey's end, and that evening they arrived all together at Mr. Craford's, who lives on the south branch of Elizabeth river, over against Norfolk. Here the commissioners left the men with all the horses and heavy baggage, and crossed the river with their servants only, for fear of making a famine in the town.

Norfolk has most the air of a town of any in Virginia. There were then near 20 brigantines and sloops riding at the wharves, and oftentimes they have more. It has all the advantages of situation requisite for trade and navigation. There is a secure harbour for a good number of ships of any burthen. Their river divides itself into three several branches, which are all navigable. The town is so near the sea, that its vessels may sail in and out in a few hours. Their trade is chiefly to the West Indies, whither they export abundance of beef, pork, flour and lumber. The worst of it is, they contribute much towards debauching the country by importing abundance of rum, which, like gin in Great Britain, breaks the constitutions, vitiates the morals, and ruins the industry of most of the poor people of this country. This place is the mart for most of the commodities produced in the adjacent parts of North Carolina. They have a pretty deal of lumber from the borders on the Dismal, who make bold with the king's land thereabouts, without the least ceremony. They not only maintain their stocks upon it, but get boards, shingles and other lumber out of it in great abundance.

The town is built on a level spot of ground upon Elizabeth river, the banks whereof are neither so high as to make the landing of goods troublesome, or so low as to be in danger of overflowing. The streets are straight, and adorned with several good houses, which increase every day. It is not a town of ordinaries and public houses, like most others in this country, but the inhabitants consist of merchants, ship-carpenters and other useful artisans, with sailors enough to manage their navigation. With all these conveniences, it lies under the two great disadvantages that most of the towns in Holland do, by having neither good air nor good water. The two cardinal virtues that make a place thrive, industry and frugality, are seen here in perfection; and so long as they can banish luxury and idleness, the town will remain in a happy and flourishing condition.

The method of building wharves here is after the following manner. They lay down long pine logs, that reach from the shore to the edge of the channel. These are bound fast together by cross pieces notched into them, according to the architecture of the log-houses in North Carolina. A wharf built thus

will stand several years, in spite of the worm, which bites here very much, but may be soon repaired in a place where so many pines grow in the neighbourhood.

The commissioners endeavoured, in this town, to list three more men to serve as guides in that dirty part of the country, but found that these people knew just enough of that frightful place to avoid it. They had been told that those Netherlands were full of bogs, of marshes and swamps, not fit for human creatures to engage in, and this was reason enough for them not to hazard their persons. So they told us, flat and plain, that we might even dangle through the mire by ourselves for them.

The worst of it was, we could not learn from any body in this town, what route to take to Coratuck inlet; till at last we had the fortune to meet with a borderer upon North Carolina, who made us a rough sketch of that part of the country. Thus, upon seeing how the land lay, we determined to march directly to Prescot landing upon North-west river, and proceed thence by water to the place where our line was to begin.

4th. In pursuance of this resolution we crossed the river this morning to Powder point, where we all took horse; and the grandees of the town, with great courtesy, conducted us ten miles on our way, as far as the long bridge built over the south branch of the river. The parson of the parish, Mr. Marston, a painful apostle from the society, made one in this ceremonious cavalcade.

At the bridge, these gentlemen, wishing us a good deliverance, returned, and then a troop of light horse escorted us as far as Prescot landing, upon North-west river. Care had been taken beforehand to provide two periaugas to lie ready at that place to transport us to Coratuck inlet. Our zeal was so great to get thither at the time appointed, that we hardly allowed ourselves leisure to eat, which in truth we had the less stomach to, by reason the dinner was served up by the landlord, whose nose stood on such ticklish terms, that it was in danger of falling into the dish. We therefore made our repast very short, and then embarked with only the surveyors and nine chosen men, leaving the rest at Mr. W——n's to take care of the horses and baggage. There we also left our chaplain, with the charitable intent, that the gentiles round about might have time and opportunity, if they pleased, of getting themselves and their children baptized.

We rowed down North-west river about 18 miles, as far as the mouth of it, where it empties itself into Albemarle sound. It was really a delightful sight, all the way, to see the banks of the river adorned with myrtle, laurel and bay trees, which preserve their verdure the year round, though it must be owned that these beautiful plants, sacred to Venus and Apollo, grow commonly in a very dirty soil. The river is, in most places, fifty or sixty yards wide, without spreading much wider at the mouth. It is remarkable it was never known to ebb and flow till the year 1713, when a violent storm opened a new inlet, about five miles south of the old one; since which convulsion, the old inlet is almost choked up by the shifting of the sand, and grows both narrower and shoaler every day.

It was dark before we could reach the mouth of the river, where our wayward stars directed us to a miserable cottage. The landlord was lately removed, bag and baggage, from Maryland, through a strong antipathy he had to work and paying his debts. For want of our tent, we were obliged to shelter ourselves in this wretched hovel, where we were almost devoured by vermin of various kinds. However, we were above complaining, being all philosophers enough to improve such slender distresses into mirth and good humour.

5th. The day being now come, on which we had agreed to meet the com-

missioners of North Carolina, we embarked very early, which we could the easier do, having no temptation to stay where we were. We shaped our course along the south end of Knot's island, there being no passage open on the north. Further still to the southward of us, we discovered two smaller islands, that go by the names of Bell's and Church's isles. We also saw a small New England sloop riding in the sound, a little to the south of our course. She had come in at the new inlet, as all other vessels have done since the opening of it. This navigation is a little difficult, and fit only for vessels that draw no more than ten feet water. The trade hither is engrossed by the saints of New England, who carry off a great deal of tobacco, without troubling themselves with paying that impertinent duty of a penny a pound.

It was just noon before we arrived at Coratuck inlet, which is now so shallow that the breakers fly over it with a horrible sound, and at the same time afford a very wild prospect. On the north side of the inlet, the high land terminated in a bluff point, from which a spit of land extended itself towards the south-east, full half a mile. The inlet lies between that spit and another on the south of it, leaving an opening of not quite a mile, which at this day is not practicable for any vessel whatsoever. And as shallow as it now is, it continues to fill up more and more, both the wind and waves rolling in the sands from the eastern shoals.

About two o'clock in the afternoon we were joined by two of the Carolina commissioners, attended by Mr. Swan, their surveyor. The other two were not quite so punctual, which was the more unlucky for us, because there could be no sport till they came. These gentlemen, it seems, had the Carolina commission in their keeping, notwithstanding which, they could not forbear paying too much regard to a proverb—fashionable in their country—not to make more haste than good speed.

However, that we who were punctual might not spend our precious time unprofitably, we took the several bearings of the coast. We also surveyed part of the adjacent high land, which had scarcely any trees growing upon it, but cedars. Among the shrubs, we were showed here and there a bush of Carolina tea called Japon, which is one species of the *Phyllarrea*. This is an evergreen, the leaves whereof have some resemblance to tea, but differ very widely both in taste and flavour. We also found some few plants of the spired leaf silk grass, which is likewise an evergreen, bearing on a lofty stem a large cluster of flowers of a pale yellow. Of the leaves of this plant the people thereabouts twist very strong cordage.

A virtuoso might divert himself here very well, in picking up shells of various hue and figure, and amongst the rest, that species of conch shell which the Indian peak is made of. The extremities of these shells are blue and the rest white, so that peak of both these colours are drilled out of one and the same shell, serving the natives both for ornament and money, and are esteemed by them far beyond gold and silver.

The cedars were of singular use to us in the absence of our tent, which we had left with the rest of the baggage for fear of overloading the periaugas. We made a circular hedge of the branches of this tree, wrought so close together as to fence us against the cold winds. We then kindled a rousing fire in the centre of it, and lay round it, like so many knights templars. But, as comfortable as this lodging was, the surveyors turned out about two in the morning to try the variation by a meridian taken from the north star, and found it to be somewhat less than three degrees west.

The commissioners of the neighbouring colony came better provided for the belly than the business. They brought not above two men along with them that would put their hands to any thing but the kettle and the frying-pan. These spent so much of their industry that way, that they had as little spirit as inclination for work.

6th. At noon, having a perfect observation, we found the latitude of Coratuck inlet to be 36 degrees and 31 minutes.

Whilst we were busied about these necessary matters, our skipper rowed to an oyster bank just by, and loaded his periauga with oysters as savoury and well-tasted as those from Colchester or Walfleet, and had the advantage of them, too, by being much larger and fatter.

About three in the afternoon the two lag commissioners arrived, and after a few decent excuses for making us wait, told us they were ready to enter upon business as soon as we pleased. The first step was to produce our respective powers, and the commission from each governor was distinctly read, and copies of them interchangeably delivered.

It was observed by our Carolina friends, that the latter part of the Virginia commission had something in it a little too lordly and positive. In answer to which we told them it was necessary to make it thus peremptory, lest the present commissioners might go upon as fruitless an errand as their predecessors. The former commissioners were tied down to act in exact conjunction with those of Carolina, and so could not advance one step farther, or one jot faster, than they were pleased to permit them. The memory of that disappointment, therefore, induced the government of Virginia to give fuller powers to the present commissioners, by authorizing them to go on with the work by themselves, in case those of Carolina should prove unreasonable, and refuse to join with them in carrying the business to execution. And all this was done lest his majesty's gracious intention should be frustrated a second time.

After both commissions were considered, the first question was, where the dividing line was to begin. This begat a warm debate; the Virginia commissioners contending, with a great deal of reason, to begin at the end of the spit of sand, which was undoubtedly the north shore of Coratuck inlet. But those of Carolina insisted strenuously, that the point of high land ought rather to be the place of beginning, because that was fixed and certain, whereas the spit of sand was ever shifting, and did actually run out farther now than formerly. The contest lasted some hours, with great vehemence, neither party receding from their opinion that night. But next morning, Mr. Moseley, to convince us he was not that obstinate person he had been represented, yielded to our reasons, and found means to bring over his colleagues.

Here we began already to reap the benefit of those peremptory words in our commission, which in truth added some weight to our reasons. Nevertheless, because positive proof was made by the oaths of two credible witnesses, that the spit of sand had advanced 200 yards towards the inlet since the controversy first began, we were willing for peace' sake to make them that allowance. Accordingly we fixed our beginning about that distance north of the inlet, and there ordered a cedar post to be driven deep into the sand for our beginning. While we continued here, we were told that on the south shore, not far from the inlet, dwelt a marooner, that modestly called himself a hermit, though he forfeited that name by suffering a wanton female to cohabit with him. His habitation was a bower, covered with bark after the Indian fashion, which in that mild situation protected him pretty well from the weather. Like the ravens, he neither ploughed nor sowed, but subsisted chiefly upon oysters, which his handmaid made a shift to gather from the adjacent rocks. Sometimes, too, for change of diet, he sent her to drive up the neighbour's cows, to moisten their mouths with a little milk. But as for raiment, he depended mostly upon his length of beard, and she upon her length of hair, part of which she brought decently forward, and the rest dangled behind quite down to her rump, she one of the most beautiful Indian princesses.

Thus did these wretches live in a dirty state of nature, and were mere Adamites, innocence only excepted.

7th. This morning the surveyors began to run the dividing line from the cedar post we had driven into the sand, allowing near three degrees for the variation. Without making this just allowance, we should not have obeyed his majesty's order in running a due west line. It seems the former commissioners had not been so exact, which gave our friends of Carolina but too just an exception to their proceedings. The line cut Dosier's island, consisting only of a flat sand, with here and there an humble shrub growing upon it. From thence it crossed over a narrow arm of the sound into Knot's island, and there split a plantation belonging to William Harding.

The day being far spent, we encamped in this man's pasture, though it lay very low, and the season now inclined people to aguish distempers. He suffered us to cut cedar branches for our enclosure, and other wood for firing, to correct the moist air and drive away the damps. Our landlady, in the days of her youth, it seems, had been a laundress in the Temple, and talked over her adventures in that station, with as much pleasure as an old soldier talks over his battles and distempers, and I believe with as many additions to the truth. The soil is good in many places of this island, and the extent of it pretty large. It lies in the form of a wedge: the south end of it is several miles over, but towards the north it sharpens into a point. It is a plentiful place for stock, by reason of the wide marshes adjacent to it, and because of its warm situation. But the inhabitants pay a little dear for this convenience, by losing as much blood in the summer season by the infinite number of mosquitoes, as all their beef and pork can recruit in the winter.

The sheep are as large as in Lincolnshire, because they are never pinched by cold or hunger. The whole island was hitherto reckoned to lie in Virginia, but now our line has given the greater part of it to Carolina. The principal freeholder here is Mr. White, who keeps open house for all travellers, that either debt or shipwreck happens to cast in his way.

8th. By break of day we sent away our largest periauga, with the baggage, round the south end of Knot's island, with orders to the men to wait for us in the mouth of North river. Soon after, we embarked ourselves on board the smaller vessel, with intent, if possible, to find a passage round the north end of the island.

We found this navigation very difficult, by reason of the continued shoals, and often stuck fast aground; for though the sound spreads many miles, yet it is in most places extremely shallow, and requires a skilful pilot to steer even a canoe safe over it. It was almost as hard to keep our temper, as to keep the channel, in this provoking situation. But the most impatient amongst us stroked down their choler, and swallowed their curses, lest, if they suffered them to break out, they might sound like complaining, which was expressly forbidden, as the first step to sedition.

At a distance we descried several islands to the northward of us, the largest of which goes by the name of Cedar island. Our periauga stuck so often that we had a fair chance to be benighted in this wide water, which must certainly have been our fate, had we not luckily spied a canoe that was giving a fortune-teller a cast from Princess Anne county over to North Carolina. But, as conjurers are sometimes mistaken, the man mistrusted we were officers of justice in pursuit of a young wench he had carried off along with him. We gave the canoe chase for more than an hour, and when we came up with her, threatened to make them all prisoners unless they would direct us into the right channel. By the pilotage of these people we rowed up an arm of the sound, called the Back bay, till we came to the head of it. There

we were stopped by a miry pocoson full half a mile in breadth, through which we were obliged to dabble on foot, plunging now and then, though we picked our way, up to the knees in mud. At the end of this charming walk we gained the terra firma of Princess Anne county. In that dirty condition we were afterwards obliged to foot it two miles, as far as John Heath's plantation, where we expected to meet the surveyors and the men who waited upon them.

While we were performing this tedious voyage, they had carried the line through the firm land of Knot's island, where it was no more than half a mile wide. After that they traversed a large marsh, that was exceedingly miry, and extended to an arm of the Back bay. They crossed that water in a canoe, which we had ordered round for that purpose, and then waded over another marsh, that reached quite to the high land of Princess Anne. Both these marshes together make a breadth of five miles, in which the men frequently sank up to the middle, without muttering the least complaint. On the contrary, they turned all these disasters into merriment.

It was discovered, by this day's work, that Knot's island was improperly so called, being in truth no more than a peninsula. The north-west side of it is only divided from the main by the great marsh above-mentioned, which is seldom totally overflowed. Instead of that, it might, by the labour of a few trenches, be drained into firm meadow, capable of grazing as many cattle as Job, in his best estate, was master of. In the miry condition in which it now lies, it feeds great numbers in the winter, though, when the weather grows warm, they are driven thence by the mighty armies of mosquitoes, which are the plague of the lower part of Carolina, as much as the flies were formerly of Egypt, and some rabbins think those flies were no other than mosquitoes.

All the people in the neighbourhood flocked to John Heath's, to behold such rarities as they fancied us to be. The men left their beloved chimney corners, the good women their spinning wheels, and some, of more curiosity than ordinary, rose out of their sick beds, to come and stare at us. They looked upon us as a troop of knights errant, who were running this great risk of our lives, as they imagined, for the public weal; and some of the gravest of them questioned much whether we were not all criminals, condemned to this dirty work for offences against the state. What puzzled them most was, what could make our men so very light-hearted under such intolerable drudgery. "Ye have little reason to be merry, my masters," said one of them, with a very solemn face, "I fancy the pocoson you must struggle with to-morrow will make you change your note, and try what metal you are made of. Ye are, to be sure, the first of human race that ever had the boldness to attempt it, and I dare say will be the last. If, therefore, you have any worldly goods to dispose of, my advice is that you make your wills this very night, for fear you die intestate to-morrow." But, alas! these frightful tales were so far from disheartening the men, that they served only to whet their resolution.

9th. The surveyors entered early upon their business this morning, and ran the line through Mr. Eyland's plantation, as far as the banks of North river. They passed over it in the periauga, and landed in Gibbs' marsh, which was a mile in breadth, and tolerably firm. They trudged through this marsh without much difficulty as far as the high land, which, promised more fertility than any they had seen in these lower parts. But this firm land lasted not long before they came upon the dreadful pocoson they had been threatened with. Nor did they find it one jot better than it had been painted to them. The beavers and otters had rendered it quite impassable for any creature but themselves.

Our poor fellows had much ado to drag their legs after them in this quag-



mire, but disdaining to be balked, they could hardly be persuaded from pressing forward by the surveyors, who found it absolutely necessary to make a traverse in the deepest place, to prevent their sticking fast in the mire, and becoming a certain prey to the turkey buzzards.

This horrible day's work ended two miles to the northward of Mr. Merchant's plantation, divided from North-west river by a narrow swamp, which is causewayed over. We took up our quarters in the open field, not far from the house, correcting, by a fire as large as a Roman funeral pile, the aguish exhalations arising from the sunken grounds that surrounded us.

The neck of land included betwixt North river and North-west river, with the adjacent marsh, belonged formerly to Governor Gibbs, but since his decease to Colonel Bladen, in right of his first lady, who was Mr. Gibbs' daughter. It would be a valuable tract of land in any country but North Carolina, where, for want of navigation and commerce, the best estate affords little more than a coarse subsistence.

10th. The sabbath happened very opportunely to give some ease to our jaded people, who rested religiously from every work, but that of cooking the kettle. We observed very few corn-fields in our walks, and those very small, which seemed the stranger to us, because we could see no other tokens of husbandry or improvement. But, upon further inquiry, we were given to understand people only made corn for themselves and not for their stocks, which know very well how to get their own living. Both cattle and hogs ramble into the neighbouring marshes and swamps, where they maintain themselves the whole winter long, and are not fetched home till the spring. Thus these indolent wretches, during one half of the year, lose the advantage of the milk of their cattle, as well as their dung, and many of the poor creatures perish in the mire, into the bargain, by this ill management. Some, who pique themselves more upon industry than their neighbours, will, now and then, in compliment to their cattle, cut down a tree whose limbs are loaded with the moss afore-mentioned. The trouble would be too great to climb the tree in order to gather this provender, but the shortest way (which in this country is always counted the best) is to fell it, just like the lazy Indians, who do the same by such trees as bear fruit, and so make one harvest for all. By this bad husbandry milk is so scarce, in the winter season, that were a big-bellied woman to long for it, she would lose her longing. And, in truth, I believe this is often the case, and at the same time a very good reason why so many people in this province are marked with a custard complexion.

The only business here is raising of hogs, which is managed with the least trouble, and affords the diet they are most fond of. The truth of it is, the inhabitants of North Carolina devour so much swine's flesh, that it fills them full of gross humours. For want too of a constant supply of salt, they are commonly obliged to eat it fresh, and that begets the highest taint of scurvy. Thus, whenever a severe cold happens to constitutions thus vitiated, it is apt to improve into the yaws, called there very justly the country distemper. This has all the symptoms of *sypilis*, with this aggravation, that no preparation of mercury will touch it. First it seizes the throat, next the palate, and lastly shows its spite to the poor nose, of which it is apt in a small time treacherously to undermine the foundation. This calamity is so common and familiar here, that it ceases to be a scandal, and in the disputes that happen about beauty, the noses have in some companies much ado to carry it. Nay, it is said that once, after three good pork years, a motion had like to have been made in the house of burgesses, that a man with a nose should be incapable of holding any place of profit in the province; which extraordinary motion could never have been intended without some hopes of a majority.

Thus, considering the foul and pernicious effects of eating swine's flesh in

a hot country, it was wisely forbidden and made an abomination to the Jews, who lived much in the same latitude with Carolina.

11th. We ordered the surveyors early to their business, who were blessed with pretty dry grounds for three miles together. But they paid dear for it in the next two, consisting of one continued frightful pocoson, which no creatures but those of the amphibious kind ever had ventured into before. This filthy quagmire did in earnest put the men's courage to a trial, and though I cannot say it made them lose their patience, yet they lost their humour for joking. They kept their gravity like so many Spaniards, so that a man might then have taken his opportunity to plunge up to the chin, without danger of being laughed at. However, this unusual composure of countenance could not fairly be called complaining. Their day's work ended at the mouth of Northern's creek, which empties itself into North-west river; though we chose to quarter a little higher up the river, near Mossy point. This we did for the convenience of an old house to shelter our persons and baggage from the rain, which threatened us hard. We judged the thing right, for there fell a heavy shower in the night, that drove the most hardy of us into the house. Though, indeed, our case was not much mended by retreating thither, because that tenement having not long before been used as a pork store, the moisture of the air dissolved the salt that lay scattered on the floor, and made it as wet within doors as without. However, the swamps and marshes we were lately accustomed to had made such beavers and otters of us that nobody caught the least cold. We had encamped so early, that we found time in the evening to walk near half a mile into the woods. There we came upon a family of mulattoes that called themselves free, though by the shyness of the master of the house, who took care to keep least in sight, their freedom seemed a little doubtful. It is certain many slaves shelter themselves in this obscure part of the world, nor will any of their righteous neighbours discover them. On the contrary, they find their account in settling such fugitives on some out-of-the-way corner of their land, to raise stocks for a mean and inconsiderable share, well knowing their condition makes it necessary for them to submit to any terms. Nor were these worthy borderers content to shelter runaway slaves, but debtors and criminals have often met with the like indulgence. But if the government of North Carolina has encouraged this unneighbourly policy in order to increase their people, it is no more than what ancient Rome did before them, which was made a city of refuge for all debtors and fugitives, and from that wretched beginning grew up in time to be mistress of a great part of the world. And, considering how fortune delights in bringing great things out of small, who knows but Carolina may, one time or other, come to be the seat of some other great empire?

12th. Every thing had been so soaked with the rain, that we were obliged to lie by a good part of the morning and dry them. However, that time was not lost, because it gave the surveyors an opportunity of platting off their work and taking the course of the river. It likewise helped to recruit the spirits of the men, who had been a little harassed with yesterday's march. Notwithstanding all this, we crossed the river before noon, and advanced our line three miles. It was not possible to make more of it, by reason good part of the way was either marsh or pocoson. The line cut two or three plantations, leaving part of them in Virginia, and part of them in Carolina. This was a case that happened frequently, to the great inconvenience of the owners, who were therefore obliged to take out two patents and pay for a new survey in each government. In the evening, we took up our quarters in Mr. Ballance's pasture, a little above the bridge built over North-west river. There we discharged the two periaugas, which in truth had been

very serviceable in transporting us over the many waters in that dirty and difficult part of our business. Our landlord had a tolerable good house and clean furniture, and yet we could not be tempted to lodge in it. We chose rather to lie in the open field, for fear of growing too tender. A clear sky, spangled with stars, was our canopy, which being the last thing we saw before we fell asleep, gave us magnificent dreams. The truth of it is, we took so much pleasure in that natural kind of lodging, that I think at the foot of the account mankind are great losers by the luxury of feather beds and warm apartments.

The curiosity of beholding so new and withal so sweet a method of encamping, brought one of the senators of North Carolina to make us a midnight visit. But he was so very clamorous in his commendations of it, that the sentinel, not seeing his quality, either through his habit or behaviour, had like to have treated him roughly. After excusing the unseasonableness of his visit, and letting us know he was a parliament man, he swore he was so taken with our lodging, that he would set fire to his house as soon as he got home, and teach his wife and children to lie, like us, in the open field.

13th. Early this morning our chaplain repaired to us with the men we had left at Mr. Wilson's. We had sent for them the evening before to relieve those who had the labour-oar from Coratuck inlet. But to our great surprise, they petitioned not to be relieved, hoping to gain immortal reputation by being the first of mankind that ventured through the great Dismal. But the rest being equally ambitious of the same honour, it was but fair to decide their pretensions by lot. After fortune had declared herself, those which she had excluded offered money to the happy persons to go in their stead. But Hercules would have as soon sold the glory of cleansing the Augean stables, which was pretty near the same sort of work. No sooner was the controversy at an end, but we sent those unfortunate fellows back to their quarters, whom chance had condemned to remain upon firm land and sleep in a whole skin. In the mean while the surveyors carried the line three miles, which was no contemptible day's work, considering how cruelly they were entangled with briars and gall bushes. The leaf of this last shrub bespeaks it to be of the alaternus family.

Our work ended within a quarter of a mile of the Dismal above-mentioned, where the ground began to be already full of sunken holes and slashes, which had, here and there, some few reeds growing in them. It is hardly credible how little the bordering inhabitants were acquainted with this mighty swamp, notwithstanding they had lived their whole lives within smell of it. Yet, as great strangers as they were to it, they pretended to be very exact in their account of its dimensions, and were positive it could not be above seven or eight miles wide, but knew no more of the matter than star-gazers know of the distance of the fixed stars. At the same time, they were simple enough to amuse our men with idle stories of the lions, panthers and alligators, they were like to encounter in that dreadful place. In short, we saw plainly there was no intelligence of this *terra incognita* to be got, but from our own experience. For that reason it was resolved to make the requisite dispositions to enter it next morning. We allotted every one of the surveyors for this painful enterprise, with twelve men to attend them. Fewer than that could not be employed in clearing the way, carrying the chain, marking the trees, and bearing the necessary bedding and provisions. Nor would the commissioners themselves have spared their persons on this occasion, but for fear of adding to the poor men's burthen, while they were certain they could add nothing to their resolution.

We quartered with our friend and fellow traveller, William Wilkins, who had been our faithful pilot to Coratuck, and lived about a mile from the place

where the line ended. Every thing looked so very clean, and the furniture so neat, that we were tempted to lodge within doors. But the novelty of being shut up so close quite spoiled our rest, nor did we breathe so free by abundance, as when we lay in the open air.

14th. Before nine of the clock this morning, the provisions, bedding and other necessities, were made up into packs for the men to carry on their shoulders into the Dismal. They were victualled for eight days at full allowance, nobody doubting but that would be abundantly sufficient to carry them through that inhospitable place; nor indeed was it possible for the poor fellows to stagger under more. As it was, their loads weighed from 60 to 70 pounds, in just proportion to the strength of those who were to bear them. It would have been unconscionable to have saddled them with burthens heavier than that, when they were to lug them through a filthy bog, which was hardly practicable with no burthen at all. Besides this luggage at their backs, they were obliged to measure the distance, mark the trees, and clear the way for the surveyors every step they went. It was really a pleasure to see with how much cheerfulness they undertook, and with how much spirit they went through all this drudgery. For their greater safety, the commissioners took care to furnish them with Peruvian bark, rhubarb and hipococanah, in case they might happen, in that wet journey, to be taken with fevers or fluxes. Although there was no need of example to inflame persons already so cheerful, yet to enter the people with the better grace, the author and two more of the commissioners accompanied them half a mile into the Dismal. The skirts of it were thinly planted with dwarf reeds and gall bushes, but when we got into the Dismal itself, we found the reeds grew there much taller and closer, and, to mend the matter, were so interlaced with bamboo-briers, that there was no scuffling through them without the help of pioneers. At the same time, we found the ground moist and trembling under our feet like a quagmire, insomuch that it was an easy matter to run a ten-foot pole up to the head in it, without exerting any uncommon strength to do it. Two of the men, whose burthens were the least cumbersome, had orders to march before, with their tomahawks, and clear the way, in order to make an opening for the surveyors. By their assistance we made a shift to push the line half a mile in three hours, and then reached a small piece of firm land, about 100 yards wide, standing up above the rest like an island. Here the people were glad to lay down their loads and take a little refreshment, while the happy man, whose lot it was to carry the jug of rum, began already, like Æsop's bread-carriers, to find it grow a good deal lighter.

After reposing about an hour, the commissioners recommended vigour and constancy to their fellow-travellers, by whom they were answered with three cheerful huzzas, in token of obedience. This ceremony was no sooner over but they took up their burthens and attended the motion of the surveyors, who, though they worked with all their might, could reach but one mile farther, the same obstacles still attending them which they had met with in the morning. However small this distance may seem to such as are used to travel at their ease, yet our poor men, who were obliged to work with an unwieldy load at their backs, had reason to think it a long way; especially in a bog where they had no firm footing, but every step made a deep impression, which was instantly filled with water. At the same time they were labouring with their hands to cut down the reeds, which were ten feet high, their legs were hampered with the briers. Besides, the weather happened to be warm, and the tallness of the reeds kept off every friendly breeze from coming to refresh them. And, indeed, it was a little provoking to hear the wind whistling among the branches of the white cedars, which grew here and there amongst the reeds, and at the same time not to have the comfort to feel the least breath of it.

In the mean time the three commissioners returned out of the Dismal the same way they went in, and, having joined their brethren, proceeded that night as far as Mr. Wilson's. This worthy person lives within sight of the Dismal, in the skirts whereof his stocks range and maintain themselves all the winter, and yet he knew as little of it as he did of *Terra Australis Incognita*. He told us a Canterbury tale of a North Briton, whose curiosity spurred him a long way into this great desert, as he called it, near twenty years ago, but he having no compass, nor seeing the sun for several days together, wandered about till he was almost famished; but at last he bethought himself of a secret his countrymen make use of to pilot themselves in a dark day. He took a fat louse out of his collar, and exposed it to the open day on a piece of white paper, which he brought along with him for his journal. The poor insect, having no eye-lids, turned himself about till he found the darkest part of the heavens, and so made the best of his way towards the north. By this direction he steered himself safe out, and gave such a frightful account of the monsters he saw, and the distresses he underwent, that no mortal since has been hardy enough to go upon the like dangerous discovery.

15th. The surveyors pursued their work with all diligence, but still found the soil of the Dismal so spongy that the water oozed up into every footstep they took. To their sorrow, too, they found the reeds and briers more firmly interwoven than they did the day before. But the greatest grievance was from large cypresses, which the wind had blown down and heaped upon one another. On the limbs of most of them grew sharp snags, pointing every way like so many pikes, that required much pains and caution to avoid. These trees being evergreens, and shooting their large tops very high, are easily overset by every gust of wind, because there is no firm earth to steady their roots. Thus many of them were laid prostrate, to the great encumbrance of the way. Such variety of difficulties made the business go on heavily, insomuch that, from morning till night, the line could advance no farther than one mile and thirty-one poles. Never was rum, that cordial of life, found more necessary than it was in this dirty place. It did not only recruit the people's spirits, now almost jaded with fatigue, but served to correct the badness of the water, and at the same time to resist the malignity of the air. Whenever the men wanted to drink, which was very often, they had nothing more to do but to make a hole, and the water bubbled up in a moment. But it was far from being either clear or well tasted, and had besides a physical effect, from the tincture it received from the roots of the shrubs and trees that grew in the neighbourhood.

While the surveyors were thus painfully employed, the commissioners discharged the long score they had with Mr. Wilson, for the men and horses which had been quartered upon him during our expedition to Coratuck. From thence we marched in good order along the east side of the Dismal, and passed the long bridge that lies over the south branch of Elizabeth river. At the end of 18 miles we reached Timothy Ivy's plantation, where we pitched our tent for the first time, and were furnished with every thing the place afforded. We perceived the happy effects of industry in this family, in which every one looked tidy and clean, and carried in their countenances the cheerful marks of plenty. We saw no drones there, which are but too common, alas, in that part of the world. Though, in truth, the distemper of laziness seizes the men oftener much than the women. These last spin, weave and knit, all with their own hands, while their husbands, depending on the bounty of the climate, are slothful in every thing but getting of children, and in that only instance make themselves useful members of an infant colony.

There is but little wool in that province, though cotton grows very kindly, and, so far south, is seldom nipped by the frost. The good women mix this

with their wool for their outer garments; though, for want of fulling, that kind of manufacture is open and sleazy. Flax likewise thrives there extremely, being perhaps as fine as any in the world, and I question not might, with a little care, be brought to rival that of Egypt; and yet the men are here so intolerably lazy, they seldom take the trouble to propagate it.

16th. The line was this day carried one mile and a half and sixteen poles. The soil continued soft and miry, but fuller of trees, especially white cedars. Many of these too were thrown down and piled in heaps, high enough for a good Muscovite fortification. The worst of it was, the poor fellows began now to be troubled with fluxes, occasioned by bad water and moist lodging: but chewing of rhubarb kept that malady within bounds.

In the mean time the commissioners decamped early in the morning, and made a march of twenty-five miles, as far as Mr. Andrew Mead's, who lives upon Nansemond river. They were no sooner got under the shelter of that hospitable roof, but it began to rain hard, and continued so to do great part of the night. This gave them much pain for their friends in the Dismal, whose sufferings spoiled their taste for the good cheer, wherewith they were entertained themselves. However, late that evening, these poor men had the fortune to come upon another terra firma, which was the luckier for them, because the lower ground, by the rain that fell, was made a fitter lodging for tadpoles than men. In our journey we remarked that the north side of this great swamp lies higher than either the east or the west, nor were the approaches to it so full of sunken grounds. We passed by no less than two quaker meeting houses, one of which had an awkward ornament on the west end of it, that seemed to ape a steeple. I must own I expected no such piece of foppery from a sect of so much outside simplicity. That persuasion prevails much in the lower end of Nansemond county, for want of ministers to pilot the people a decent way to heaven. The ill reputation of tobacco planted in those lower parishes makes the clergy unwilling to accept of them, unless it be such whose abilities are as mean as their pay. Thus, whether the churches be quite void or but indifferently filled, the quakers will have an opportunity of gaining proselytes. It is a wonder no popish missionaries are sent from Maryland to labour in this neglected vineyard, who we know have zeal enough to traverse sea and land on the meritorious errand of making converts. Nor is it less strange that some wolf in sheep's clothing arrives not from New England to lead astray a flock that has no shepherd. People uninstructed in any religion are ready to embrace the first that offers. It is natural for helpless man to adore his Maker in some form or other, and were there any exception to this rule, I should suspect it to be among the Hottentots of the cape of Good Hope and of North Carolina.

There fell a great deal of rain in the night, accompanied with a strong wind. The fellow-feeling we had for the poor Dismalites, on account of this unkind weather, rendered the down we laid upon uneasy. We fancied them half-drowned in their wet lodging, with the trees blowing down about their ears. These were the gloomy images our fears suggested; though it was so much uneasiness clear gain. They happened to come off much better, by being luckily encamped on the dry piece of ground afore-mentioned.

17th. They were, however, forced to keep the sabbath in spite of their teeth, contrary to the dispensation our good chaplain had given them. Indeed, their short allowance of provision would have justified their making the best of their way, without distinction of days. It was certainly a work both of necessity and self-preservation, to save themselves from starving. Nevertheless, the hard rain had made every thing so thoroughly wet, that it was quite impossible to do any business. They therefore made a virtue of what they could not help, and contentedly rested in their dry situation.

Since the surveyors had entered the Dismal, they had laid eyes on no living creature: neither bird nor beast, insect nor reptile came in view. Doubtless, the eternal shade that broods over this mighty bog, and hinders the sunbeams from blessing the ground, makes it an uncomfortable habitation for any thing that has life. Not so much as a Zealand frog could endure so *aguish* a situation. It had one beauty, however, that delighted the eye, though at the expense of all the other senses: the moisture of the soil preserves a continual verdure, and makes every plant an evergreen, but at the same time the foul damps ascend without ceasing, corrupt the air, and render it unfit for respiration. Not even a turkey buzzard will venture to fly over it, no more than the Italian vultures will over the filthy lake Avernus, or the birds in the Holy Land, over the Salt sea, where Sodom and Gomorrah formerly stood.

In these sad circumstances, the kindest thing we could do for our suffering friends was to give them a place in the Litany. Our chaplain, for his part, did his office, and rubbed us up with a seasonable sermon: This was quite a new thing to our brethren of North Carolina, who live in a climate where no clergyman can breathe, any more than spiders in Ireland.

For want of men in holy orders, both the members of the council and justices of the peace are empowered by the laws of that country to marry all those who will not take one another's word; but for the ceremony of christening their children, they trust that to chance. If a parson come in their way, they will crave a cast of his office, as they call it, else they are content their offspring should remain as arrant pagans as themselves. They account it among their greatest advantages that they are not priest-ridden, not remembering that the clergy is rarely guilty of bestriding such as have the misfortune to be poor. One thing may be said for the inhabitants of that province, that they are not troubled with any religious fumes, and have the least superstition of any people living. They do not know Sunday from any other day, any more than Robinson Crusoe did, which would give them a great advantage were they given to be industrious. But they keep so many sabbaths every week, that their disregard of the seventh day has no manner of cruelty in it, either to servants or cattle. It was with some difficulty we could make our people quit the good cheer they met with at this house, so it was late before we took our departure; but to make us amends, our landlord was so good as to conduct us ten miles on our way, as far as the Cypress swamp, which drains itself into the Dismal. Eight miles beyond that we forded the waters of the Coropeak, which tend the same way as do many others on that side. In six miles more we reached the plantation of Mr. Thomas Spight, a grandee of North Carolina. We found the good man upon his crutches, being crippled with the gout in both his knees. Here we flattered ourselves we should by this time meet with good tidings of the surveyors, but had reckoned, alas! without our host: on the contrary, we were told the Dismal was at least thirty miles wide in that place. However, as nobody could say this on his own knowledge, we ordered guns to be fired and a drum to be beaten, but received no answer, unless it was from that prating nymph Echo, who, like a loquacious wife, will always have the last word, and sometimes return three for one. It was indeed no wonder our signal was not heard at that time, by the people in the Dismal, because, in truth, they had not then penetrated one third of their way. They had that morning fallen to work with great vigour; and, finding the ground better than ordinary, drove on the line two miles and thirty-eight poles. This was reckoned an Herculean day's work, and yet they would not have stopped there, had not an impenetrable cedar thicket checked their industry. Our landlord had seated himself on the borders of this Dismal, for the advantage of the green



food his cattle find there all winter, and for the rooting that supports his hogs. This, I own, is some convenience to his purse, for which his whole family pay dear in their persons, for they are devoured by mosquitoes all the summer, and have agues every spring and fall, which corrupt all the juices of their bodies, give them a cadaverous complexion, and besides a lazy, creeping habit, which they never get rid of.

We ordered several men to patrol on the edge of the Dismal, both towards the north and towards the south, and to fire guns at proper distances. This they performed very punctually, but could hear nothing in return, nor gain any sort of intelligence. In the mean time whole flocks of women and children flew hither to stare at us, with as much curiosity as if we had lately landed from Bantam or Morocco. Some borderers, too, had a great mind to know where the line would come out, being for the most part apprehensive lest their lands should be taken into Virginia. In that case they must have submitted to some sort of order and government; whereas, in North Carolina, every one does what seems best in his own eyes. There were some good women that brought their children to be baptized, but brought no capons along with them to make the solemnity cheerful. In the mean time it was strange that none came to be married in such a multitude, if it had only been for the novelty of having their hands joined by one in holy orders. Yet so it was, that though our chaplain christened above a hundred, he did not marry so much as one couple during the whole expedition. But marriage is reckoned a lay contract in Carolina, as I said before, and a country justice can tie the fatal knot there, as fast as an archbishop. None of our visitors could, however, tell us any news of the surveyors, nor indeed was it possible any of them should at that time, they being still laboring in the midst of the Dismal. It seems they were able to carry the link this day no further than one mile and sixty-one poles, and that whole distance was through a miry cedar bog, where the ground trembled under their feet most frightfully. In many places too their passage was retarded by a great number of fallen trees, that lay horsing upon one another. Though many circumstances concurred to make this an unwholesome situation, yet the poor men had no time to be sick, nor can one conceive a more calamitous case than it would have been to be laid up in that uncomfortable quagmire. Never were patients more tractable, or willing to take physic, than these honest fellows; but it was from a dread of laying their bones in a bog that would soon spew them up again. That consideration also put them upon more caution about their lodging. They first covered the ground with square pieces of cypress bark, which now, in the spring, they could easily slip off the tree for that purpose. On this they spread their bedding; but unhappily the weight and warmth of their bodies made the water rise up betwixt the joints of the bark, to their great inconvenience. Thus they lay not only moist, but also exceedingly cold, because their fires were continually going out. For no sooner was the trash upon the surface burnt away, but immediately the fire was extinguished by the moisture of the soil, insomuch that it was great part of the sentinel's business to rekindle it again in a fresh place, every quarter of an hour. Nor could they indeed do their duty better, because cold was the only enemy they had to guard against in a miserable morass, where nothing can inhabit.

20th. We could get no tidings yet of our brave adventurers, notwithstanding we despatched men to the likeliest stations to inquire after them. They were still scuffling in the mire, and could not possibly forward the line this whole day more than one mile and sixty-four chains. Every step of this day's work was through a cedar bog, where the trees were somewhat smaller and grew more into a thicket. It was now a great misfortune to the men to find their provisions grow less as their labour grew greater; they were all forced

to come to short allowance, and consequently to work hard without filling their bellies. Though this was very severe upon English stomachs, yet the people were so far from being discomfited at it, that they still kept up their good humour, and merrily told a young fellow in the company, who looked very plump and wholesome, that he must expect to go first to pot, if matters should come to extremity. This was only said by way of jest, yet it made him thoughtful in earnest. However, for the present he returned them a very civil answer, letting them know that, dead or alive, he should be glad to be useful to such worthy good friends. But, after all, this humorous saying had one very good effect, for that younker, who before was a little inclined by his constitution to be lazy, grew on a sudden extremely industrious, that so there might be less occasion to carbonade him for the good of his fellow travellers. While our friends were thus embarrassed in the Dismal, the commissioners began to lie under great uneasiness for them. They knew very well their provisions must by this time begin to fall short, nor could they conceive any likely means of a supply. At this time of the year both the cattle and hogs had forsaken the skirts of the Dismal, invited by the springing grass on the firm land. All our hopes were that Providence would cause some wild game to fall in their way, or else direct them to a wholesome vegetable for their subsistence. In short they were haunted with so many frights on this occasion, that they were in truth more uneasy than the persons whose case they lamented. We had several visitors from Edenton, in the afternoon, that came with Mr. Gale, who had prudently left us at Coratuck, to scuffle through that dirty country by ourselves. These gentlemen, having good noses, had smelled out, at thirty miles' distance, the precious liquor with which the liberality of our good friend Mr. Mead had just before supplied us. That generous person had judged very right, that we were now got out of the latitude of drink proper for men in affliction, and therefore was so good as to send his cart loaded with all sorts of refreshments, for which the commissioners returned him their thanks, and the chaplain his blessing.

21st. The surveyors and their attendants began now in good earnest to be alarmed with apprehensions of famine, nor could they forbear looking with some sort of appetite upon a dog which had been the faithful companion of their travels. Their provisions were now near exhausted. They had this morning made the last distribution, that so each might husband his small pittance as he pleased. Now it was that the fresh coloured young man began to tremble every joint of him, having dreamed, the night before, that the Indians were about to barbacue him over live coals. The prospect of famine determined the people, at last, with one consent, to abandon the line for the present, which advanced but slowly, and make the best of their way to firm land. Accordingly they set off very early, and, by the help of the compass which they carried along with them, steered a direct westwardly course. They marched from morning till night, and computed their journey to amount to about four miles, which was a great way, considering the difficulties of the ground. It was all along a cedar swamp, so dirty and perplexed, that if they had not travelled for their lives, they could not have reached so far. On their way they espied a turkey buzzard, that flew prodigiously high to get above the noisome exhalations that ascend from that filthy place. This they were willing to understand as a good omen, according to the superstition of the ancients, who had great faith in the flight of vultures. However, after all this tedious journey, they could yet discover no end of their toil, which made them very pensive, especially after they had eaten the last morsel of their provisions. But to their unspeakable comfort, when all was hushed in the evening, they heard the cattle low, and the dogs bark, very distinctly, which, to men in that distress, was more delightful music than Faustina or Marinelli

could have made. In the mean time the commissioners could get no news of them from any of their visitors, who assembled from every point of the compass. But the good landlord had visitors of another kind while we were there, that is to say, some industrious masters of ships, that lay in Nansemond river. These worthy commanders came to bespeak tobacco from these parts to make up their loadings, in contempt of the Virginia law, which positively forbade their taking in any made in North Carolina. Nor was this restraint at all unreasonable; because they have no law in Carolina, either to mend the quality or lessen the quantity of tobacco, or so much as to prevent the turning out of seconds, all which cases have been provided against by the laws of Virginia. Wherefore, there can be no reason why the inhabitants of that province should have the same advantage of shipping their tobacco in our parts, when they will by no means submit to the same restrictions that we do.

22d. Our patrol happened not to go far enough to the northward this morning, if they had, the people in the Dismal, might have heard the report of their guns. For this reason they returned without any tidings, which threw us into a great though unnecessary perplexity. This was now the ninth day since they entered into that inhospitable swamp, and consequently we had reason to believe their provisions were quite spent. We knew they worked hard, and therefore would eat heartily, so long as they had wherewithal to recruit their spirits, not imagining the swamp so wide as they found it. Had we been able to guess where the line would come out, we would have sent men to meet them with a fresh supply; but as we could know nothing of that, and as we had neither compass nor surveyor to guide a messenger on such an errand, we were unwilling to expose him to no purpose; therefore, all we were able to do for them, in so great an extremity, was to recommend them to a merciful Providence. However long we might think the time, yet we were cautious of showing our uneasiness, for fear of mortifying our landlord. He had done his best for us, and therefore we were unwilling he should think us dissatisfied with our entertainment. In the midst of our concern, we were most agreeably surprised, just after dinner, with the news that the Dismalites were all safe. These blessed tidings were brought to us by Mr. Swan, the Carolina surveyor, who came to us in a very tattered condition. After very short salutations, we got about him as if he had been a Hottentot, and began to inquire into his adventures. He gave us a detail of their uncomfortable voyage through the Dismal, and told us, particularly, they had pursued their journey early that morning, encouraged by the good omen of seeing the crows fly over their heads; that, after an hour's march over very rotten ground, they, on a sudden, began to find themselves among tall pines, that grew in the water, which in many places was knee deep. This pine swamp, into which that of Coropeak drained itself, extended near a mile in breadth; and though it was exceedingly wet, yet it was much harder at bottom than the rest of the swamp; that about ten in the morning they recovered firm land, which they embraced with as much pleasure as shipwrecked wretches do the shore. After these honest adventurers had congratulated each other's deliverance, their first inquiry was for a good house, where they might satisfy the importunity of their stomachs. Their good genius directed them to Mr. Brinkley's, who dwells a little to the southward of the line. This man began immediately to be very inquisitive, but they declared they had no spirits to answer questions, till after dinner. "But pray, gentlemen," said he, "answer me one question at least: what shall we get for your dinner?" To which they replied, "No matter what, so it be but enough." He kindly supplied their wants as soon as possible, and by the strength of that refreshment they made a shift to come to us in the evening, to tell their own story. They all

looked very thin, and as ragged as the Gibeonite ambassadors did in the days of yore.

Our surveyors told us they had measured ten miles in the Dismal, and computed the distance they had marched since to amount to about five more, so they made the whole breadth to be fifteen miles in all.

23d. It was very reasonable that the surveyors, and the men who had been sharers in their fatigue, should now have a little rest. They were all, except one, in good health and good heart, blessed be God! notwithstanding the dreadful hardships they had gone through. It was really a pleasure to see the cheerfulness wherewith they received the order to prepare to re-enter the Dismal on the Monday following, in order to continue the line from the place where they had left off measuring, that so we might have the exact breadth of that dirty place. There were no more than two of them that could be persuaded to be relieved on this occasion, or suffer the other men to share the credit of that bold undertaking, neither would these have suffered it had not one of them been very lame, and the other much indisposed. By the description the surveyors gave of the Dismal, we were convinced that nothing but the exceeding dry season we had been blessed with could have made the passing of it practicable. It is the source of no less than five several rivers which discharge themselves southward into Albemarle sound, and of two that run northerly into Virginia. From thence it is easy to imagine that the soil must be thoroughly soaked with water, or else there must be plentiful stores of it under ground; to supply so many rivers; especially since there is no lake, or any considerable body of that element to be seen on the surface. The rivers that head in it from Virginia are the south branch of Nansemond, and the west branch of Elizabeth; and those from Carolina are North-west river, North river, Pasquotank, Little river, and Pequimons.

There is one remarkable part of the Dismal, lying to the south of the line, that has few or no trees growing on it, but contains a large tract of tall reeds. These being green all the year round, and wavering with every wind, have procured it the name of the Green sea. We are not yet acquainted with the precise extent of the Dismal, the whole having never been surveyed; but it may be computed at a medium to be about thirty miles long and ten miles broad, though where the line crossed it, it was completely fifteen miles wide. But it seems to grow narrower towards the north, or at least does so in many places. The exhalations that continually rise from this vast body of mire and nastiness infect the air for many miles round, and render it very unwholesome for the bordering inhabitants. It makes them liable to agues, pleurisies, and many other distempers, that kill abundance of people, and make the rest look no better than ghosts. It would require a great sum of money to drain it, but the public treasure could not be better bestowed, than to preserve the lives of his majesty's liege people, and at the same time render so great a tract of swamp very profitable, besides the advantage of making a channel to transport by water carriage goods from Albemarle sound into Nansemond and Elizabeth rivers, in Virginia.

24th. This being Sunday, we had a numerous congregation, which flocked to our quarters from all the adjacent country. The news that our surveyors were come out of the Dismal, increased the number very much, because it would give them an opportunity of guessing, at least, whereabouts the line would cut, whereby they might form some judgment whether they belonged to Virginia or Carolina. Those who had taken up land within the disputed bounds were in great pain lest it should be found to lie in Virginia; because this being done contrary to an express order of that government, the patentees had great reason to fear they should in that case have lost their land. But

their apprehensions were now at an end, when they understood that all the territory which had been controverted was like to be left in Carolina. In the afternoon, those who were to re-enter the Dismal were furnished with the necessary provisions, and ordered to repair the over-night to their landlord, Peter Brinkley's, that they might be ready to begin their business early on Monday morning. Mr. Irvin was excused from the fatigue, in compliment to his lungs; but Mr. Mayo and Mr. Swan were robust enough to return upon that painful service, and, to do them justice, they went with great alacrity. The truth was, they now knew the worst of it; and could guess pretty near at the time when they might hope to return to land again.

25th. The air was chilled this morning with a smart north-west wind, which favoured the Dismalites in their dirty march. They returned by the path they had made in coming out, and with great industry arrived in the evening at the spot where the line had been discontinued. After so long and laborious a journey, they were glad to repose themselves on their couches of cypress-bark, where their sleep was as sweet as it would have been on a bed of Finland down. In the mean time, we who stayed behind had nothing to do, but to make the best observations we could upon that part of the country. The soil of our landlord's plantation, though none of the best, seemed more fertile than any thereabouts, where the ground is near as sandy as the deserts of Africa, and consequently barren. The road leading from thence to Edenton, being in distance about twenty-seven miles, lies upon a ridge called Sandy ridge, which is so wretchedly poor that it will not bring potatoes. The pines in this part of the country are of a different species from those that grow in Virginia: their bearded leaves are much longer and their cones much larger. Each cell contains a seed of the size and figure of a black-eye pea, which, shedding in November, is very good mast for hogs, and fattens them in a short time. The smallest of these pines are full of cones, which are eight or nine inches long, and each affords commonly sixty or seventy seeds. This kind of mast has the advantage of all other, by being more constant, and less liable to be nipped by the frost, or eaten by the caterpillars. The trees also abound more with turpentine, and consequently yield more tar, than either the yellow or the white pine; and for the same reason make more durable timber for building. The inhabitants hereabouts pick up knots of lightwood in abundance, which they burn into tar, and then carry it to Norfolk or Nansemond for a market. The tar made in this method is the less valuable, because it is said to burn the cordage, though it is full as good for all other uses, as that made in Sweden and Muscovy. Surely there is no place in the world where the inhabitants live with less labour than in North Carolina. It approaches nearer to the description of Lubberland than any other, by the great felicity of the climate, the easiness of raising provisions, and the slothfulness of the people. Indian corn is of so great increase, that a little pains will subsist a very large family with bread, and then they may have meat without any pains at all, by the help of the low grounds, and the great variety of mast that grows on the high land. The men, for their parts, just like the Indians, impose all the work upon the poor women. They make their wives rise out of their beds early in the morning, at the same time that they lie and snore, till the sun has risen one third of his course, and dispersed all the unwholesome damps. Then, after stretching and yawning for half an hour, they light their pipes, and, under the protection of a cloud of smoke, venture out into the open air; though, if it happens to be never so little cold, they quickly return shivering into the chimney corner. When the weather is mild, they stand leaning with both their arms upon the corn-field fence, and gravely consider whether they had best go and take a small heat at the hoe; but generally find reasons to put it off till another time. Thus they loiter

away their lives, like Solomon's sluggard, with their arms across, and at the winding up of the year scarcely have bread to eat. To speak the truth, it is a thorough aversion to labor that makes people file off to North Carolina, where plenty and a warm sun confirm them in their disposition to laziness for their whole lives.

26th. Since we were like to be confined to this place, till the people returned out of the Dismal, it was agreed that our chaplain might safely take a turn to Edenton, to preach the Gospel to the infidels there, and christen their children. He was accompanied thither by Mr. Little, one of the Carolina commissioners, who, to show his regard for the church, offered to treat him on the road with a fricassee of rum. They fried half a dozen rashers of very fat bacon in a pint of rum, both which being dished up together, served the company at once both for meat and drink. Most of the rum they get in this country comes from New England, and is so bad and unwholesome, that it is not improperly called "kill-devil." It is distilled there from foreign molasses, which, if skilfully managed, yields near gallon for gallon. Their molasses comes from the same country, and has the name of "long sugar" in Carolina, I suppose from the ropiness of it, and serves all the purposes of sugar, both in their eating and drinking. When they entertain their friends bountifully, they fall not to set before them a capacious bowl of Bombo, so called from the admiral of that name. This is a compound of rum and water in equal parts, made palatable with the said long sugar. As good humour begins to flow, and the bowl to ebb, they take care to replenish it with sheer rum, of which there always is a reserve under the table. But such generous doings happen only when that balsam of life is plenty; for they have often such melancholy times, that neither landgraves nor cassiques can procure one drop for their wives, when they lie in, or are troubled with the colic or vapours. Very few in this country have the industry to plant orchards, which, in a dearth of rum, might supply them with much better liquor. The truth is, there is one inconvenience that easily discourages lazy people from making this improvement: very often, in autumn, when the apples begin to ripen, they are visited with numerous flights of paroquets, that bite all the fruit to pieces in a moment, for the sake of the kernels. The havoc they make is sometimes so great, that whole orchards are laid waste in spite of all the noises that can be made, or mawkins that can be dressed up, to fright them away. These ravenous birds visit North Carolina only during the warm season, and so soon as the cold begins to come on, retire back towards the sun. They rarely venture so far north as Virginia, except in a very hot summer, when they visit the most southern parts of it. They are very beautiful; but like some other pretty creatures, are apt to be loud and mischievous.

27th. Betwixt this and Edenton there are many whortleberry slashes, which afford a convenient harbour for wolves and foxes. The first of these wild beasts is not so large and fierce as they are in other countries more northerly. He will not attack a man in the keenest of his hunger, but run away from him, as from an animal more mischievous than himself. The foxes are much bolder, and will sometimes not only make a stand, but likewise assault any one that would balk them of their prey. The inhabitants hereabouts take the trouble to dig abundance of wolf-pits, so deep and perpendicular, that when a wolf is once tempted into them, he can no more scramble out again, than a husband who has taken the leap can scramble out of matrimony. Most of the houses in this part of the country are log-houses, covered with pine or cypress shingles, three feet long, and one broad. They are hung upon laths with pegs, and their doors too turn upon wooden hinges, and have wooden locks to secure them, so that the building is finished without nails or other iron work. They also set up their pales

without any nails at all, and indeed more securely than those that are nailed. There are three rails mortised into the posts, the lowest of which serves as a sill with a groove in the middle, big enough to receive the end of the pales: the middle part of the pale rests against the inside of the next rail, and the top of it is brought forward to the outside of the uppermost. Such wreathing of the pales in and out makes them stand firm, and much harder to unfix than when nailed in the ordinary way.

Within three or four miles of Edenton, the soil appears to be a little more fertile, though it is much cut with slashes, which seem all to have a tendency towards the Dismal. This town is situated on the north side of Albemarle sound, which is there about five miles over. A dirty slash runs all along the back of it, which in the summer is a foul annoyance, and furnishes abundance of that Carolina plague, mosquitoes. There may be forty or fifty houses, most of them small, and built without expense. A citizen here is counted extravagant, if he has ambition enough to aspire to a brick chimney. Justice herself is but indifferently lodged, the court-house having much the air of a common tobacco-house. I believe this is the only metropolis in the Christian or Mahometan world, where there is neither church, chapel, mosque, synagogue, or any other place of public worship of any sect or religion whatsoever. What little devotion there may happen to be is much more private than their vices. The people seem easy without a minister, as long as they are exempted from paying him. Sometimes the Society for propagating the Gospel has had the charity to send over missionaries to this country; but unfortunately the priest has been too lewd for the people, or, which oftener happens, they too lewd for the priest. For these reasons these reverend gentlemen have always left their flocks as arrant heathen as they found them. Thus much however may be said for the inhabitants of Edenton, that not a soul has the least taint of hypocrisy, or superstition, acting very frankly and above-board in all their excesses.

Provisions here are extremely cheap, and extremely good, so that people may live plentifully at a trifling expense. Nothing is dear but law, physic, and strong drink, which are all bad in their kind, and the last they get with so much difficulty, that they are never guilty of the sin of suffering it to sour upon their hands. Their vanity generally lies not so much in having a handsome dining-room, as a handsome house of office: in this kind of structure they are really extravagant. They are rarely guilty of flattering or making any court to their governors, but treat them with all the excesses of freedom and familiarity. They are of opinion their rulers would be apt to grow insolent, if they grew rich, and for that reason take care to keep them poorer, and more dependent, if possible, than the saints in New England used to do their governors. They have very little corn, so they are forced to carry on their home traffic with paper money. This is the only cash that will tarry in the country, and for that reason the discount goes on increasing between that and real money, and will do so to the end of the chapter.

28th. Our time passed heavily in our quarters, where we were quite cloyed with the Carolina felicity of having nothing to do. It was really more insupportable than the greatest fatigue, and made us even envy the drudgery of our friends in the Dismal. Besides, though the men we had with us were kept in exact discipline, and behaved without reproach, yet our landlord began to be tired of them, fearing they would breed a famine in his family. Indeed, so many keen stomachs made great havoc amongst the beef and bacon which he had laid in for his summer provision, nor could he easily purchase more, at that time of the year, with the money we paid him, because people having no certain market seldom provide any more of these commodities than will barely supply their own occasions. Besides the



weather was now grown too warm to lay in a fresh stock so late in the spring. These considerations abated somewhat of that cheerfulness with which he bade us welcome in the beginning, and made him think the time quite as long as we did until the surveyors returned. While we were thus all hands uneasy, we were comforted with the news that this afternoon the line was finished through the Dismal. The messenger told us it had been the hard work of three days to measure the length of only five miles, and mark the trees as they passed along, and by the most exact survey they found the breadth of the Dismal in this place to be completely fifteen miles. How wide it may be in other parts, we can give no account, but believe it grows narrower towards the north; possibly towards Albemarle sound it may be something broader, where so many rivers issue out of it. All we know for certain is, that from the place where the line entered the Dismal, to where it came out, we found the road round that portion of it which belonged to Virginia to be about sixty-five miles. How great the distance may be from each of those points, round that part that falls within the bounds of Carolina, we had no certain information: though it is conjectured it cannot be so little as thirty miles. At which rate the whole circuit must be about a hundred. What a mass of mud and dirt is treasured up within this filthy circumference, and what a quantity of water must perpetually drain into it from the rising ground that surrounds it on every side! Without taking the exact level of the Dismal, we may be sure that it declines towards the places where the several rivers take their rise, in order to carrying off the constant supplies of water. Were it not for such discharges, the whole swamp would long since have been converted into a lake. On the other side this declension must be very gentle, else it would be laid perfectly dry by so many continual drains; whereas, on the contrary, the ground seems every where to be thoroughly drenched even in the driest season of the year. The surveyors concluded this day's work with running twenty-five chains up into the firm land, where they waited further orders from the commissioners.

29th. This day the surveyors proceeded with the line no more than one mile and fifteen chains, being interrupted by a mill swamp, through which they made no difficulty of wading, in order to make their work more exact. Thus, like Norway mice, these worthy gentlemen went right forward, without suffering themselves to be turned out of the way by any obstacle whatever. We are told by some travellers, that those mice march in mighty armies, destroying all the fruits of the earth as they go along. But something peculiar to those obstinate little animals is, that nothing stops them in their career, and if a house happen to stand in their way, disdaining to go an inch about, they crawl up one side of it, and down the other: or if they meet with any river, or other body of water, they are so determined, that they swim directly over it, without varying one point from their course for the sake of any safety or convenience. The surveyors were also hindered some time by setting up posts in the great road, to show the bounds between the two colonies.

Our chaplain returned to us in the evening from Edenton, in company with the Carolina commissioners. He had preached there in the court-house, for want of a consecrated place, and made no less than nineteen of father Hennepin's Christians.

By the permission of the Carolina commissioners, Mr. Swan was allowed to go home, as soon as the survey of the Dismal was finished; he met with this indulgence for a reason that might very well have excused his coming at all; namely, that he was lately married. What remained of the drudgery for this season was left to Mr. Mosely, who had hitherto acted only in the capacity of a commissioner. They offered to employ Mr. Joseph Mayo as

their surveyor in Mr. Swan's stead, but he thought it not proper to accept of it, because he had hitherto acted as a volunteer in behalf of Virginia, and did not care to change sides, though it might have been to his advantage.

30th. The line was advanced this day six miles and thirty-five chains, the woods being pretty clear, and interrupted with no swamp, or other wet ground. The land hereabout had all the marks of poverty, being for the most part sandy and full of pines. This kind of ground, though unfit for ordinary tillage, will however bring cotton and potatoes in plenty, and consequently food and raiment to such as are easily contented, and, like the wild Irish, find more pleasure in laziness than luxury. It also makes a shift to produce Indian corn, rather by the felicity of the climate than by the fertility of the soil. They who are more industrious than their neighbours may make what quantity of tar they please, though indeed they are not always sure of a market for it. The method of burning tar in Sweden and Muscovy succeeds not well in this warmer part of the world. It seems they kill the pine trees, by barking them quite round at a certain height, which in those cold countries brings down the turpentine into the stump in a year's time. But experience has taught us that in warm climates the turpentine will not so easily descend, but is either fixed in the upper parts of the tree, or fried out by the intense heat of the sun.

Care was taken to erect a post in every road that our line ran through, with Virginia carved on the north side of it, and Carolina on the south, that the bounds might every where appear. In the evening the surveyors took up their quarters at the house of one Mr. Parker, who, by the advantage of a better spot of land than ordinary, and a more industrious wife, lives comfortably, and has a very neat plantation.

31st. It rained a little this morning, but this, happening again upon a Sunday, did not interrupt our business. However the surveyors made no scruple of protracting and plotting off their work upon that good day, because it was rather an amusement than a drudgery. Here the men feasted on the fat of the land, and believing the dirtiest part of their work was over, had a more than ordinary gaiety of heart. We christened two of our landlord's children, which might have remained infidels all their lives, had not we carried Christianity home to his own door. The truth of it is, our neighbours of North Carolina are not so zealous as to go much out of their way to procure this benefit for their children: otherwise, being so near Virginia, they might, without exceeding much trouble, make a journey to the next clergyman, upon so good an errand. And indeed should the neighbouring ministers, once in two or three years, vouchsafe to take a turn among these gentiles, to baptize them and their children, it would look a little apostolical, and they might hope to be required for at hereafter, if that be not thought too long to tarry for their reward.

April 1st. The surveyors getting now upon better ground, quite disengaged from underwoods, pushed on the line almost twelve miles. They left Somerton chapel near two miles to the northwards, so that there was now no place of public worship left in the whole province of North Carolina.

The high land of North Carolina was barren, and covered with a deep sand; and the low grounds were wet and boggy, insomuch that several of our horses were mired, and gave us frequent opportunities to show our horsemanship.

The line cut William Spight's plantation in two, leaving little more than his dwelling house and orchard in Virginia. Sundry other plantations were split in the same unlucky manner, which made the owners accountable to both governments. Wherever we passed we constantly found the borderers laid it to heart if their land was taken into Virginia: they chose much rather

to belong to Carolina, where they pay no tribute, either to God or to Cæsar. Another reason was, that the government there is so loose, and the laws are so feebly executed, that, like those in the neighbourhood of Sidon formerly, every one does just what seems good in his own eyes. If the governor's hands have been weak in that province, under the authority of the lords proprietors, much weaker then were the hands of the magistrate, who, though he might have had virtue enough to endeavour to punish offenders, which very rarely happened, yet that virtue had been quite impotent, for want of ability to put it in execution. Besides, there might have been some danger, perhaps, in venturing to be so rigorous, for fear of undergoing the fate of an honest justice in Coratuck precinct. This bold magistrate, it seems, taking upon him to order a fellow to the stocks, for being disorderly in his drink, was, for his intemperate zeal, carried thither himself, and narrowly escaped being whipped by the rabble into the bargain.

This easy day's work carried the line to the banks of Somerton creek, that runs out of Chowan river, a little below the mouth of Nottoway.

2d. In less than a mile from Somerton creek the line was carried to Blackwater, which is the name of the upper part of Chowan, running some miles above the mouth of Nottoway. It must be observed that Chowan, after taking a compass round the most beautiful part of North Carolina, empties itself into Albemarle sound, a few miles above Edenton. The tide flows seven or eight miles higher than where the river changes its name, and is navigable thus high for any small vessel. Our line intersected it exactly half a mile to the northward of Nottoway. However, in obedience to his majesty's command, we directed the surveyors to come down the river as far as the mouth of Nottoway, in order to continue our true west line from thence. Thus we found the mouth of Nottoway to lie no more than half a minute farther to the northward than Mr. Lawson had formerly done. That gentleman's observation, it seems, placed it in  $36^{\circ} 30'$ , and our working made it out to be  $36^{\circ} 30\frac{1}{2}'$ —a very inconsiderable variance.

The surveyors crossed the river over against the middle of the mouth of Nottoway, where it was about eighty yards wide. From thence they ran the line about half a mile through a dirty pocoson, as far as an Indian field. Here we took up our lodging in a moist situation, having the pocoson above mentioned on one side of us, and a swamp on the other.

In this camp three of the Meherrin Indians made us a visit. They told us that the small remains of their nation had deserted their ancient town, situated near the mouth of the Meherrin river, for fear of the Catawbæ, who had killed fourteen of their people the year before; and the few that survived that calamity, had taken refuge amongst the English, on the east side of Chowan. Though, if the complaint of these Indians were true, they are hardly used by our Carolina friends. But they are the less to be pitied, because they have ever been reputed the most false and treacherous to the English of all the Indians in the neighbourhood.

Not far from the place where we lay, I observed a large oak which had been blown up by the roots, the body of which was shivered into perfect strings, and was, in truth, the most violent effects of lightning I ever saw.

But the most curious instance of that dreadful meteor happened at York, where a man was killed near a pine tree in which the lightning made a hole before it struck the man, and left an exact figure of the tree upon his breast, with all its branches, to the wonder of all that beheld it, in which I shall be more particular hereafter.

We made another trial of the variation in this place, and found it some minutes less than we had done at Coratuck inlet; but so small a difference might easily happen through some defect in one or other of the observations; and, therefore, we altered not our compass for the matter.

3d. By the advantage of clear woods, the line was extended twelve miles and three quarters, as far as the banks of Meherrin. Though the mouth of this river lies fifteen miles below the mouth of Nottoway, yet it winds so much to the northward, that we came upon it, after running this small distance.

During the first seven miles, we observed the soil to be poor and sandy; but as we approached Meherrin it grew better, though there it was cut to pieces by sundry miry branches, which discharge themselves into that river. Several of our horses plunged up to the saddle skirts, and were not disengaged without difficulty.

The latter part of our day's work was pretty laborious, because of the unevenness of the way, and because the low ground of the river was full of cypress snags, as sharp and dangerous to our horses as so many chevaux-de-frise. We found the whole distance from the mouth of Nottoway to Meherrin river, where our line intersected it, thirteen miles and a quarter.

It was hardly possible to find a level large enough on the banks of the river whereupon to pitch our tent. But though the situation was, on that account, not very convenient for us, yet it was for our poor horses, by reason of the plenty of small reeds on which they fed voraciously. These reeds are green here all the year round, and will keep cattle in tolerable good plight during the winter. But whenever the hogs come where they are, they destroy them in a short time, by ploughing up their roots, of which, unluckily, they are very fond.

The river was in this place about as wide as the river Jordan, that is, forty yards, and would be navigable very high for flat bottom boats and canoes, if it were not choked up with large trees, brought down by every fresh. Though the banks were full twenty feet high from the surface of the water, yet we saw certain marks of their having been overflowed.

These narrow rivers that run high up into the country are subject to frequent inundations, when the waters are rolled down with such violence as to carry all before them. The logs that are then floated, are very fatal to the bridges built over these rivers, which can hardly be contrived strong enough to stand against so much weight and violence joined together.

The Isle of Wight county begins about three miles to the east of Meherrin river, being divided from that of Nansemond only by a line of marked trees.

4th. The river was here hardly fordable, though the season had been very dry. The banks too were so steep that our horses were forced to climb like mules to get up them. Nevertheless we had the luck to recover the opposite shore without damage.

We halted for half an hour at Charles Anderson's, who lives on the western bank of the river, in order to christen one of his children. In the mean time, the surveyors extended the line two miles and thirty-nine chains, in which small distance Meherrin river was so serpentine, that they crossed it three times. Then we went on to Mr. Kinchin's, a man of figure and authority in North Carolina, who lives about a mile to the southward of the place where the surveyors left off. By the benefit of a little pains, and good management, this worthy magistrate lives in much affluence. Amongst other instances of his industry, he had planted a good orchard, which is not common in that indolent climate; nor is it at all strange, that such improvident people, who take no thought for the morrow, should save themselves the trouble to make improvements that will not pay them for several years to come. Though, if they could trust futurity for any thing, they certainly would for cider, which they are so fond of, that they generally drink it before it has done working, lest the fermentation might unluckily turn it sour.

It is an observation, which rarely fails of being true, both in Virginia and Carolina, that those who take care to plant good orchards are, in their ge-

neral characters, industrious people. This held good in our landlord, who had many houses built on his plantation, and every one kept in decent repair. His wife, too, was tidy, his furniture clean, his pewter bright, and nothing seemed to be wanting to make his home comfortable.

Mr. Kinchin made us the compliment of his house, but because we were willing to be as little troublesome as possible, we ordered the tent to be pitched in his orchard, where the blossoms of the apple trees contributed not a little to the sweetness of our lodging.

5th. Because the spring was now pretty forward, and the rattlesnakes began to crawl out of their winter quarters, and might grow dangerous, both to the men and their horses, it was determined to proceed no farther with the line till the fall. Besides, the uncommon fatigue the people had undergone for near six weeks together, and the inclination they all had to visit their respective families, made a recess highly reasonable.

The surveyors were employed great part of the day, in forming a correct and elegant map of the line, from Coratuck inlet to the place where they left off. On casting up the account in the most accurate manner, they found the whole distance we had run to amount to seventy three miles and thirteen chains. Of the map they made two fair copies, which agreeing exactly, were subscribed by the commissioners of both colonies, and one of them was delivered to those on the part of Virginia, and the other to those on the part of North Carolina.

6th. Thus we finished our spring campaign, and having taken leave of our Carolina friends, and agreed to meet them again the tenth of September following, at the same Mr. Kinchin's, in order to continue the line, we crossed Meherrin river near a quarter of a mile from the house. About ten miles from that we halted at Mr. Kindred's plantation, where we christened two children.

It happened that some of Isle of Wight militia were exercising in the adjoining pasture, and there were females enough attending that martial appearance to form a more invincible corps. Ten miles farther we passed Nottoway river at Bolton's ferry, and took up our lodgings about three miles from thence, at the house of Richard Parker, an honest planter, whose labours were rewarded with plenty, which, in this country, is the constant portion of the industrious.

7th. The next day being Sunday, we ordered notice to be sent to all the neighbourhood that there would be a sermon at this place, and an opportunity of christening their children. But the likelihood of rain got the better of their devotion, and what, perhaps, might still be a stronger motive of their curiosity. In the morning we despatched a runner to the Nottoway town, to let the Indians know we intended them a visit that evening, and our honest landlord was so kind as to be our pilot thither, being about four miles from his house. Accordingly in the afternoon we marched in good order to the town, where the female scouts, stationed on an eminence for that purpose, had no sooner spied us, but they gave notice of our approach to their fellow citizens by continual whoops and cries, which could not possibly have been more dismal at the sight of their most implacable enemies. This signal assembled all their great men, who received us in a body, and conducted us into the fort. This fort was a square piece of ground, inclosed with substantial puncheons, or strong palisades, about ten feet high, and leaning a little outwards, to make a scalade more difficult. Each side of the square might be about a hundred yards long, with loop-holes at proper distances, through which they may fire upon the enemy. Within this inclosure we found bark cabins sufficient to lodge all their people, in case they should be obliged to retire thither. These cabins are no other but close arbours made of saplings, arched at the

top, and covered so well with bark as to be proof against all weather. The fire is made in the middle, according to the Hibernian fashion, the smoke whereof finds no other vent but at the door, and so keeps the whole family warm, at the expense both of their eyes and complexion. The Indians have no standing furniture in their cabins but hurdles to repose their persons upon, which they cover with mats and deer-skins. We were conducted to the best apartments in the fort, which just before had been made ready for our reception, and adorned with new mats, that were very sweet and clean. The young men had painted themselves in a hideous manner, not so much for ornament as terror. In that frightful equipage they entertained us with sundry war dances, wherein they endeavoured to look as formidable as possible. The instrument they danced to was an Indian drum, that is, a large gourd with a skin braced tight over the mouth of it. The dancers all sang to the music, keeping exact time with their feet, while their heads and arms were screwed into a thousand menacing postures. Upon this occasion the ladies had arrayed themselves in all their finery. They were wrapped in their red and blue match coats, thrown so negligently about them, that their mahogany skins appeared in several parts, like the Lacedæmonian damsels of old. Their hair was braided with white and blue peak, and hung gracefully in a large roll upon their shoulders.

This peak consists of small cylinders cut out of a conch shell, drilled through and strung like beads. It serves them both for money and jewels, the blue being of much greater value than the white, for the same reason that Ethiopian mistresses in France are dearer than French, because they are more scarce. The women wear necklaces and bracelets of these precious materials, when they have a mind to appear lovely. Though their complexions be a little sad-coloured, yet their shapes are very strait and well proportioned. Their faces are seldom handsome, yet they have an air of innocence and bashfulness, that with a little less dirt would not fail to make them desirable. Such charms might have had their full effect upon men who had been so long deprived of female conversation, but that the whole winter's soil was so crusted on the skins of those dark angels, that it required a very strong appetite to approach them. The bear's oil, with which they anoint their persons all over, makes their skins soft, and at the same time protects them from every species of vermin that use to be troublesome to other uncleanly people. We were unluckily so many, that they could not well make us the compliment of bed-fellows, according to the Indian rules of hospitality, though a grave matron whispered one of the commissioners very civilly in the ear, that if her daughter had been but one year older, she should have been at his devotion.

It is by no means a loss of reputation among the Indians, for damsels that are single to have intrigues with the men; on the contrary, they account it an argument of superior merit to be liked by a great number of gallants. However, like the ladies that game, they are a little mercenary in their amours, and seldom bestow their favours out of stark love and kindness. But after these women have once appropriated their charms by marriage, they are from thenceforth faithful to their vows, and will hardly ever be tempted by an agreeable gallant, or be provoked by a brutal or even by a careless husband to go astray. The little work that is done among the Indians is done by the poor women, while the men are quite idle, or at most employed only in the gentlemanly diversions of hunting and fishing. In this, as well as in their wars, they use nothing but fire-arms, which they purchase of the English for skins. Bows and arrows are grown into disuse, except only amongst their boys. Nor is it ill policy, but on the contrary very prudent, thus to furnish the Indians with fire-arms, because it makes them depend

entirely upon the English, not only for their trade, but even for their subsistence. Besides, they were really able to do more mischief, while they made use of arrows, of which they would let silently fly several in a minute with wonderful dexterity, whereas now they hardly ever discharge their fire-locks more than once, which they insidiously do from behind a tree, and then retire as nimbly as the Dutch horse used to do now and then formerly in Flanders. We put the Indians to no expense, but only of a little corn for our horses, for which in gratitude we cheered their hearts with what rum we had left, which they love better than they do their wives and children. Though these Indians dwell among the English, and see in what plenty a little industry enables them to live, yet they choose to continue in their stupid idleness, and to suffer all the inconveniences of dirt, cold and want, rather than to disturb their heads with care, or defile their hands with labour.

The whole number of people belonging to the Nottoway town, if you include women and children, amount to about two hundred. These are the only Indians of any consequence now remaining within the limits of Virginia. The rest are either removed, or dwindled to a very inconsiderable number, either by destroying one another, or else by the small-pox and other diseases. Though nothing has been so fatal to them as their ungovernable passion for rum, with which, I am sorry to say it, they have been but too liberally supplied by the English that live near them. And here I must lament the bad success Mr. Boyle's charity has hitherto had towards converting any of these poor heathens to Christianity. Many children of our neighbouring Indians have been brought up in the college of William and Mary. They have been taught to read and write, and have been carefully instructed in the principles of the Christian religion, till they came to be men. Yet after they returned home, instead of civilizing and converting the rest, they have immediately relapsed into infidelity and barbarism themselves.

And some of them too have made the worst use of the knowledge they acquired among the English, by employing it against their benefactors. Besides, as they unhappily forget all the good they learn, and remember the ill, they are apt to be more vicious and disorderly than the rest of their countrymen. I ought not to quit this subject without doing justice to the great prudence of colonel Spotswood in this affair. That gentleman was lieutenant governor of Virginia when Carolina was engaged in a bloody war with the Indians. At that critical time it was thought expedient to keep a watchful eye upon our tributary savages, who we knew had nothing to keep them to their duty but their fears. Then it was that he demanded of each nation a competent number of their great men's children to be sent to the college, where they served as so many hostages for the good behaviour of the rest, and at the same time were themselves principled in the Christian religion. He also placed a school master among the Saponi Indians, at the salary of fifty pounds per annum, to instruct their children. The person that undertook that charitable work was Mr. Charles Griffin, a man of a good family, who, by the innocence of his life, and the sweetness of his temper, was perfectly well qualified for that pious undertaking. Besides, he had so much the secret of mixing pleasure with instruction, that he had not a scholar who did not love him affectionately. Such talents must needs have been blest with a proportionable success, had he not been unluckily removed to the college, by which he left the good work he had begun unfinished. In short, all the pains he had taken among the infidels had no other effect but to make them something cleaner than other Indians are. The care colonel Spotswood took to tincture the Indian children with Christianity produced the following epigram, which was not published during his administration, for fear it might then have looked like flattery.



Long has the furious priest assayed in vain,  
 With sword and faggot, infidels to gain,  
 But now the milder soldier wisely tries  
 By gentler methods to unveil their eyes.  
 Wonders apart, he knew 'twere vain t'engage  
 The fix'd preventions of misguided age.  
 With fairer hopes he forms the Indian youth  
 To early manners, probity and truth.  
 The lion's whelp thus, on the Lybian shore, }  
 Is tamed and gentled by the artful Moor, }  
 Not the grim sire, inured to blood before. }

I am sorry I cannot give a better account of the state of the poor Indians with respect to Christianity, although a great deal of pains has been and still continues to be taken with them. For my part, I must be of opinion, as I hinted before, that there is but one way of converting these poor infidels, and reclaiming them from barbarity, and that is, charitably to intermarry with them, according to the modern policy of the most Christian king in Canada and Louisiana. Had the English done this at the first settlement of the colony, the infidelity of the Indians had been worn out at this day, with their dark complexions, and the country had swarmed with people more than it does with insects. It was certainly an unreasonable nicety, that prevented their entering into so good-natured an alliance. All nations of men have the same natural dignity, and we all know that very bright talents may be lodged under a very dark skin. The principal difference between one people and another proceeds only from the different opportunities of improvement. The Indians by no means want understanding, and are in their figure tall and well-proportioned. Even their copper-coloured complexion would admit of blanching, if not in the first, at the farthest in the second generation. I may safely venture to say, the Indian women would have made altogether as honest wives for the first planters, as the damsels they used to purchase from aboard the ships. It is strange, therefore, that ~~any~~ good Christian should have refused a wholesome, straight bed-fellow, ~~when~~ he might have had so fair a portion with her, as the merit of saving her soul.

8th. We rested on our clean mats very comfortably, though alone, and the next morning went to the toilet of some of the Indian ladies, where, what with the charms of their persons and the smoke of their apartments, we were almost blinded. They offered to give us silk-grass baskets of their own making, which we modestly refused, knowing that an Indian present, like that of a nun, is a liberality put out to interest, and a bribe placed to the greatest advantage. Our chaplain observed with concern, that the ruffles of some of our fellow travellers were a little discoloured with pochoon, where-with the good man had been told those ladies used to improve their invisible charms.

About 10 o'clock we marched out of town in good order, and the war captains saluted us with a volley of small arms. From thence we proceeded over Black-water bridge to colonel Henry Harrison's, where we congratulated each other upon our return into Christendom.

Thus ended our progress for this season, which we may justly say was attended with all the success that could be expected. Besides the punctual performance of what was committed to us, we had the pleasure to bring back every one of our company in perfect health. And this we must acknowledge to be a singular blessing, considering the difficulties and dangers to which they had been exposed. We had reason to fear the many waters and sunken grounds, through which we were obliged to wade, might have

thrown the men into sundry acute distempers; especially the Dismal, where the soil was so full of water, and the air so full of damps, that nothing but a Dutchman could live in them. Indeed the foundation of all our success was the exceeding dry season. It rained during the whole journey but rarely, and then, as when Herod built his temple, only in the night or upon the sabbath, when it was no hinderance at all to our progress.

September. The tenth of September being thought a little too soon for the commissioners to meet, in order to proceed on the line, on account of snakes, it was agreed to put it off to the twentieth of the same month, of which due notice was sent to the Carolina commissioners.

Sept. 19. We, on the part of Virginia, that we might be sure to be punctual, arrived at Mr. Kinchin's, the place appointed, on the nineteenth, after a journey of three days, in which nothing remarkable happened. We found three of the Carolina commissioners had taken possession of the house, having come thither by water from Edenton. By the great quantity of provisions these gentlemen brought, and the few men they had to eat them, we were afraid they intended to carry the line to the South sea. They had five hundred pounds of bacon and dried beef, and five hundred pounds of biscuit, and not above three or four men. The misfortune was, they forgot to provide horses to carry their good things, or else trusted to the uncertainty of hiring them here, which, considering the place, was leaving too much to that jilt, hazard. On our part we had taken better care, being completely furnished with every thing necessary for transporting our baggage and provisions. Indeed we brought no other provisions out with us but a thousand pounds of bread, and had faith enough to depend on Providence for our meat, being desirous to husband the public money as much as possible. We had no less than twenty men, besides the chaplain, the surveyors and all the servants, to be subsisted upon this bread. However, that it might hold out the better, our men had been ordered to provide themselves at home with provision for ten days, in which time we judged we should get beyond the inhabitants, where forest game of all sorts was like to be plenty at that time of the year.

20th. This being the day appointed for our rendezvous, great part of it was spent in the careful fixing our baggage and assembling our men, who were ordered to meet us here. We took care to examine their arms, and made proof of the powder provided for the expedition. Our provision-horses had been hindered by the rain from coming up exactly at the day; but this delay was the less disappointment, by reason of the ten days' subsistence the men had been directed to provide for themselves. Mr. Moseley did not join us till the afternoon, nor Mr. Swan till several days after.

Mr. Kinchin had unadvisedly sold the men a little brandy of his own making, which produced much disorder, causing some to be too choleric, and others too loving; in so much that a damsel, who assisted in the kitchen, had certainly suffered what the nuns call martyrdom, had she not capitulated a little too soon. This outrage would have called for some severe discipline, had she not bashfully withdrawn herself early in the morning, and so carried off the evidence.

21st. We despatched away the surveyors without loss of time, who, with all their diligence, could carry the line no farther than three miles and a hundred and seventy-six poles, by reason the low ground was one entire thicket. In that distance they crossed Meherrin river the fourth time. In the mean while the Virginia commissioners thought proper to conduct their baggage a farther way about, for the convenience of a clearer road.

The Carolina gentlemen did at length, more by fortune than forecast, hire a clumsy vehicle, something like a cart, to transport their effects as far as

**Roanoke.** This wretched machine, at first setting out, met with a very rude choque, that broke a case-bottle of cherry brandy in so unlucky a manner that not one precious drop was saved. This melancholy beginning foreboded an unprosperous journey, and too quick a return, to the persons most immediately concerned.

In our way we crossed Fountain creek, which runs into Meherrin river, so called from the disaster of an unfortunate Indian trader who had formerly been drowned in it, and, like Icarus, left his name to that fatal stream. We took up our quarters on the plantation of John Hill, where we pitched our tent, with design to tarry till such time as the surveyors could work their way to us.

22d. This being Sunday, we had an opportunity of resting from our labours. The expectation of such a novelty as a sermon in these parts brought together a numerous congregation. When the sermon was over, our chaplain did his part towards making eleven of them Christians.

Several of our men had intermitting fevers, but were soon restored to their health again by proper remedies. Our chief medicine was dogwood bark, which we used, instead of that of Peru, with good success. Indeed, it was given in larger quantity, but then, to make the patients amends, they swallowed much fewer doses.

In the afternoon our provision horses arrived safe in the camp. They had met with very heavy rains, but, thank God, not a single biscuit received the least damage thereby. We were furnished by the neighbours with very lean cheese and very fat mutton, upon which occasion it will not be improper to draw one conclusion, from the evidence of North Carolina, that sheep would thrive much better in the woods than in pasture land, provided a careful shepherd were employed to keep them from straying, and, by the help of dogs, to protect them also from the wolves.

23d. The surveyors came to us at night, though they had not brought the line so far as our camp, for which reason we thought it needless to go forward till they came up with us. They could run no more than four miles and five poles, because the ground was every where grown up with thick bushes. The soil here appeared to be very good, though much broken betwixt Fountain creek and Roanoke river. The line crossed Meherrin river the fifth and last time, nor were our people sorry to part with a stream the meanders of which had given them so much trouble.

Our hunters brought us four wild turkeys, which at that season began to be fat and very delicious, especially the hens. These birds seem to be of the bustard kind, and fly heavily. Some of them are exceedingly large, and weigh upwards of forty pounds; nay, some bold historians venture to say, upwards of fifty pounds. They run very fast, stretching forth their wings all the time, like the ostrich, by way of sails to quicken their speed. They roost commonly upon very high trees, standing near some river or creek, and are so stupefied at the sight of fire, that if you make a blaze in the night near the place where they roost, you may fire upon them several times successively, before they will dare to fly away. Their spurs are so sharp and strong, that the Indians used formerly to point their arrows with them, though now they point them with a sharp white stone. In the spring the turkey-cocks begin to gobble, which is the language wherein they make love.

It rained very hard in the night, with a violent storm of thunder and lightning, which obliged us to trench in our tent all round, to carry off the water that fell upon it.

24th. So soon as the men could dry their blankets, we sent out the surveyors, who now meeting with more favourable grounds, advanced the line seven miles and eighty-two poles. However, the commissioners did not think proper to decamp that day, believing they might easily overtake the surveyors the

next. In the mean time they sent out some of their most expert gunners, who brought in four more wild turkeys.

This part of the country being very proper for raising cattle and hogs, we observed the inhabitants lived in great plenty without killing themselves with labour. I found near our camp some plants of that kind of rattle-snake root, called star-grass. The leaves shoot out circularly, and grow horizontally and near the ground. The root is in shape not unlike the rattle of that serpent, and is a strong antidote against the bite of it. It is very bitter, and where it meets with any poison, works by violent sweats, but where it meets with none, has no sensible operation but that of putting the spirits into a great hurry, and so of promoting perspiration. The rattle-snake has an utter antipathy to this plant, insomuch that if you smear your hands with the juice of it, you may handle the viper safely. Thus much I can say on my own experience, that once in July, when these snakes are in their greatest vigour, I besmeared a dog's nose with the powder of this root, and made him trample on a large snake several times, which, however, was so far from biting him, that it perfectly sickened at the dog's approach, and turned its head from him with the utmost aversion.

Our chaplain, to show his zeal, made an excursion of six miles to christen two children, but without the least regard to the good cheer at these solemnities.

25th. The surveyors, taking the advantage of clear woods, pushed on the line seven miles and forty poles. In the mean time the commissioners marched with the baggage about twelve miles, and took up their quarters near the banks of the Beaver pond, (which is one branch of Fountain creek,) just by the place where the surveyors were to finish their day's work. In our march one of the men killed a small rattle-snake, which had no more than two rattles. Those vipers remain in vigour generally till towards the end of September, or sometimes later, if the weather continue a little warm. On this consideration we had provided three several sorts of rattle-snake root, made up into proper doses, and ready for immediate use, in case any one of the men or their horses had been bitten. We crossed Fountain creek once more in our journey this day, and found the grounds very rich, notwithstanding they were broken and stony. Near the place where we encamped the county of Brunswick is divided from the Isle of Wight. These counties run quite on the back of Surry and Prince George, and are laid out in very irregular figures. As a proof the land mended hereabouts, we found the plantations began to grow thicker by much than we had found them lower down.

26th. We hurried away the surveyors without loss of time, who extended the line ten miles and a hundred and sixty poles, the grounds proving dry and free from under-woods. By the way the chain-carriers killed two more rattle-snakes, which I own was a little ungrateful, because two or three of the men had strided over them without receiving any hurt; though one of these vipers had made bold to strike at one of the baggage horses, as he went along, but by good luck his teeth only grazed on the hoof, without doing him any damage. However, these accidents were, I think, so many arguments that we had very good reason to defer our coming out till the 20th of September. We observed abundance of St. Andrew's cross in all the woods we passed through, which is the common remedy used by the Indian traders to cure their horses when they are bitten by rattle-snakes. It grows on a straight stem, about eighteen inches high, and bears a yellow flower on the top, that has an eye of black in the middle, with several pairs of narrow leaves shooting out at right angles from the stock over against one another. This antidote grows providentially all over the woods, and upon all sorts of soil, that it may be every where at hand in case a disaster should happen, and may be had all the hot months while the snakes are dangerous.

About four o'clock in the afternoon we took up our quarters upon Caban branch, which also discharges itself into Fountain creek. On our way we observed several meadows clothed with very rank grass, and branches full of tall reeds, in which cattle keep themselves fat good part of the winter. But hogs are as injurious to both as goats are said to be to vines, and for that reason it was not lawful to sacrifice them to Bacchus. We halted by the way to christen two children at a spring, where their mothers waylaid us for that good purpose.

27th. It was ten o'clock before the surveyors got to work, because some of the horses had straggled a great distance from the camp. Nevertheless, meeting with practicable woods, they advanced the line nine miles and a hundred and four poles. We crossed over Pea creek about four miles from our quarters, and, three miles farther, Lizard creek, both which empty their waters into Roanoke river. Between these two creeks a poor man waited for us with five children to be baptized, and we halted till the ceremony was ended. The land seemed to be very good, by the largeness of the trees, though very stony. We proceeded as far as Pigeon-roost creek, which also runs into Roanoke, and there quartered. We had not the pleasure of the company of any of the Carolina commissioners in this day's march, except Mr. Moseley's, the rest tarrying behind to wait the coming up of their baggage cart, which they had now not seen nor heard (though the wheels made a dismal noise) for several days past. Indeed it was a very difficult undertaking to conduct a cart through such pathless and perplexed woods, and no wonder if its motion was a little planetary. We would have paid them the compliment of waiting for them, could we have done it at any other expense but that of the public.

In the stony grounds we rode over we found great quantity of the true ipococanna, which in this part of the world is called Indian physic. This has several stalks growing up from the same root about a foot high, bearing a leaf resembling that of a strawberry. It is not so strong as that from Brazil, but has the same happy effects, if taken in somewhat a larger dose. It is an excellent vomit, and generally cures intermitting fevers and bloody fluxes at once or twice taking. There is abundance of it in the upper part of the country, where it delights most in a stony soil intermixed with black mould.

28th. Our surveyors got early to work, yet could forward the line but six miles and a hundred and twenty-one poles, because of the uneven grounds in the neighbourhood of Roanoke, which they crossed in this day's work. In that place the river is forty-nine poles wide, and rolls down a crystal stream of very sweet water, insomuch that when there comes to be a great monarch in this part of the world, he will cause all the water for his own table to be brought from Roanoke, as the great kings of Persia did theirs from the Nile, and Choaspis, because the waters of those rivers were light, and not apt to corrupt.\*

The great falls of Roanoke lie about twenty miles lower, to which a sloop of moderate burthen may come up. There are, besides these, many smaller falls above, though none that entirely intercept the passage of the river, as the great ones do, by a chain of rocks for eight miles together. The river forks about thirty-six miles higher, and both branches are pretty equal in breadth where they divide, though the southern, now called the Dan, runs up the farthest. That to the north runs away near north-west, and is called the Staunton, and heads not far from the source of Appomattox river, while the

\* The same humour prevails at this day in the kings of Denmark, who order all the East India ships of that nation to call at the cape of Good Hope, and take in a but of water from a spring on the Table Hill, and bring it to Copenhagen, for their majesties' own drinking.

Dan stretches away pretty near west, and runs clear through the great mountains.

We did not follow the surveyors till towards noon, being detained in our camp to christen several more children. We were conducted a nearer way, by a famous woodsman, called Epaphroditus Bamton. This forester spends all his time in ranging the woods, and is said to make great havoc among the deer, and other inhabitants of the forest, not much wilder than himself.

We proceeded to the canoe landing on Roanoke, where we passed the river with the baggage. But the horses were directed to a ford about a mile higher, called by the Indians *Moni-seep*, which signifies, in their jargon, shallow water. This is the ford where the Indian traders used to cross with their horses, in their way to the Catawba nation. There are many rocks in the river thereabouts, on which grows a kind of water grass, which the wild geese are fond of, and resort to it in great numbers. We landed on the south side of Roanoke, at a plantation of Col. Mumford's, where, by that gentleman's special directions, we met with sundry refreshments. Here we pitched our tent, for the benefit of the prospect, upon an eminence that overlooked a broad piece of low ground, very rich, though liable to be overflowed. By the way, one of our men killed another rattle-snake, with eleven rattles, having a large gray squirrel in his maw, the head of which was already digested, while the body remained still entire. The way these snakes catch their prey is thus: They ogle the poor little animal, till by force of the charm he falls down stupified and senseless on the ground. In that condition the snake approaches, and moistens first one ear and then the other with his spawl, and after that the other parts of the head, to make all slippery. When that is done, he draws this member into his mouth, and after it, by slow degrees, all the rest of the body.

29th. This being Sunday, we had divine service and a sermon, at which several of the borderers assisted, and we concluded the duties of the day by christening five children. Our devotion being performed in the open field, like that of Mr. Whitfield's flocks, an unfortunate shower of rain had almost dispersed our congregation. About four in the afternoon the Carolina commissioners made a shift to come up with us, whom we had left at Pigeon-roost creek the Friday before, waiting for their provisions. When their cart came up they prudently discharged it, and rather chose to hire two men to carry some part of their baggage. The rest they had been obliged to leave behind, in the crotch of an old tree, for want of proper conveniences to transport it any farther.

We found in the low ground several plants of the fern root, which is said to be much the strongest antidote yet discovered against the poison of the rattle-snake. The leaves of it resemble those of fern, from whence it obtained its name. Several stalks shoot from the same root, about six inches long, that lie mostly on the ground. It grows in a very rich soil, under the protection of some tall tree, that shades it from the meridian beams of the sun. The root has a faint spicy taste, and is preferred by the southern Indians to all other counter-poisons in this country. But there is another sort preferred by the northern Indians, that they call *Seneca rattle-snake root*, to which wonderful virtues are ascribed in the cure of pleurisies, fevers, rheumatisms, and dropsies; besides it being a powerful antidote against the venom of the rattle-snake.

In the evening the messenger we had sent to Christiana returned with five Saponi Indians. We could not entirely rely on the dexterity of our own men, which induced us to send for some of the Indians. We agreed with two of the most expert of them, upon reasonable terms, to hunt for us the remaining part of our expedition. But one of them falling sick soon after,

we were content to take only the other, whose hunting name was Bear-skin. This Indian, either by his skill or good luck, supplied us plentifully all the way with meat, seldom discharging his piece in vain. By his assistance, therefore, we were able to keep our men to their business, without suffering them to straggle about the woods, on pretence of furnishing us with necessary food.

30th. It had rained all night, and made every thing so wet, that our surveyors could not get to their work before noon. They could therefore measure no more than four miles and two hundred and twenty poles, which, according to the best information we could get, was near as high as the uppermost inhabitant at that time. We crossed the Indian trading path above-mentioned about a mile from our camp, and a mile beyond that forded Haw-tree creek. The woods we passed through had all the tokens of sterility, except a small poisoned field, on which grew no tree bigger than a slender sapling. The larger trees had been destroyed, either by fire or caterpillars, which is often the case in the upland woods, and the places where such desolation happens are called poisoned fields. We took up our quarters upon a branch of Great creek, where there was tolerable good grass for the poor horses. These poor animals having now got beyond the latitude of corn, were obliged to shift as well as they could for themselves.

On our way the men roused a bear, which being the first we had seen since we came out, the poor beast had many pursuers. Several persons contended for the credit of killing him: though he was so poor he was not worth the powder. This was some disappointment to our woodsmen, who commonly prefer the flesh of bears to every kind of venison. There is something indeed peculiar to this animal, namely, that its fat is very firm, and may be eaten plentifully without rising in the stomach. The paw (which, when stripped of the hair, looks like a human foot,) is accounted a delicious morsel by all who are not shocked at the ungracious resemblance it bears to a human foot.

October 1st. There was a white frost this morning on the ground, occasioned by a north-west wind, which stood our friend in dispersing all aguish damps, and making the air wholesome at the same time that it made it cold. Encouraged therefore by the weather, our surveyors got to work early, and by the benefit of clear woods, and level ground, drove the line twelve miles and twelve poles.

At a small distance from our camp we crossed Great creek, and about seven miles further Nut-bush creek, so called from the many hazel-trees growing upon it. By good luck many branches of these creeks were full of reeds, to the great comfort of our horses. Near five miles from thence we encamped on a branch that runs into Nut-bush creek, where those reeds flourished more than ordinary. The land we marched over was for the most part broken and stony, and in some places covered over with thickets almost impenetrable. At night the surveyors, taking advantage of a clear sky, made a third trial of the variation, and found it still something less than three degrees, so that it did not diminish by advancing towards the west, or by approaching the mountains, nor yet by increasing our distance from the sea; but remained much the same we had found it at Coratuck inlet. One of our Indians killed a large fawn, which was very welcome, though, like Hudibras' horse, it had hardly flesh enough to cover its bones. In the low grounds the Carolina gentlemen showed us another plant, which they said was used in their country to cure the bite of the rattle-snake. It put forth several leaves in figure like a heart, and was clouded so like the common Assa-rabacca, that I conceived it to be of that family.

2d. So soon as the horses could be found, we hurried away the surveyors,



who advanced the line nine miles and two hundred and fifty-four poles. About three miles from the camp they crossed a large creek, which the Indians called Massamoni, signifying, in their language, Paint creek, because of the great quantity of red ochre found in its banks. This in every fresh tinges the water just as the same mineral did formerly, and to this day continues to tinge, the famous river Adonis, in Phœnicia, by which there hangs a celebrated fable. Three miles beyond that we passed another water with difficulty, called Yapatsco, or Beaver creek. Those industrious animals had dammed up the water so high, that we had much ado to get over. It is hardly credible how much work of this kind they will do in the space of one night. They bite young saplings into proper lengths with their fore-teeth, which are exceeding strong and sharp, and afterwards drag them to the place where they intend to stop the water. Then they know how to join timber and earth together with so much skill, that their work is able to resist the most violent flood that can happen. In this they are qualified to instruct their betters, it being certain their dams will stand firm when the strongest that are made by men will be carried down the stream. We observed very broad low grounds upon this creek, with a growth of large trees, and all the other signs of fertility, but seemed subject to be every where overflowed in a fresh. The certain way to catch these sagacious animals is this: Squeeze all the juice out of the large pride of the beaver, and six drops out of the small pride. Powder the inward bark of sassafras, and mix it with this juice, then bait therewith a steel trap, and they will eagerly come to it, and be taken.

About three miles and a half further we came to the banks of another creek, called, in the Saponi language, Ohimpa-moni, signifying Jumping creek, from the frequent jumping of fish during the spring season.

Here we encamped, and by the time the horses were hobbled, our hunters brought us no less than a brace and a half of deer, which made great plenty, and consequently great content in our quarters. Some of our people had shot a great wild cat, which was that fatal moment making a comfortable meal upon a fox-squirrel, and an ambitious sportsman of our company claimed the merit of killing this monster after it was dead. The wild cat is as big again as any household cat, and much the fiercest inhabitant of the woods. Whenever it is disabled, it will tear its own flesh for madness. Although a panther will run away from a man, a wild cat will only make a surly retreat, and now and then facing about, if he be too closely pursued; and will even pursue in his turn, if he observe the least sign of fear or even of caution in those that pretend to follow him. The flesh of this beast, as well as of the panther, is as white as veal, and altogether as sweet and delicious.

3d. We got to work early this morning, and carried the line eight miles and a hundred and sixty poles. We forded several runs of excellent water, and afterwards traversed a large level of high land full of lofty walnut, poplar, and white oak trees, which are certain proofs of a fruitful soil. This level was near two miles in length, and of an unknown breadth, quite out of danger of being overflowed, which is a misfortune most of the low grounds are liable to in those parts. As we marched along we saw many buffalo tracks, and abundance of their dung very fresh, but could not have the pleasure of seeing them. They either smelt us out, having that sense very quick, or else were alarmed at the noise that so many people must necessarily make in marching along. At the sight of a man they will snort and grunt, cock up their ridiculous short tails, and tear up the ground with a sort of timorous fury. These wild cattle hardly ever range alone, but herd together like those that are tame. They are seldom seen so far north as forty degrees of latitude, delighting much in canes and reeds, which grow generally more southerly.

We quartered on the banks of a creek that the inhabitants call Tewaho-

miny, or Tuskarooda creek, because one of that nation had been killed thereabouts, and his body thrown into the creek.

Our people had the fortune to kill a brace of does, one of which we presented to the Carolina gentlemen, who were glad to partake of the bounty of Providence, at the same time that they sneered at us for depending upon it.

4th. We hurried away the surveyors about nine this morning, who extended the line seven miles and a hundred and sixty poles, notwithstanding the ground was exceedingly uneven. At the distance of five miles we forded a stream to which we gave the name of Bluewing creek, because of the great number of those fowls that then frequented it. About two and a half miles beyond that, we came upon Sugar-tree creek, so called from the many trees of that kind that grow upon it. By tapping this tree, in the first warm weather in February, one may get from twenty to forty gallons of liquor, very sweet to the taste and agreeable to the stomach. This may be boiled into molasses first, and afterwards into very good sugar, allowing about ten gallons of the liquor to make a pound. There is no doubt, too, that a very fine spirit may be distilled from the molasses, at least as good as rum. The sugar tree delights only in rich ground, where it grows very tall, and by the softness and sponginess of the wood should be a quick grower. Near this creek we discovered likewise several spice trees, the leaves of which are fragrant, and the berries they bear are black when dry, and of a hot taste, not much unlike pepper. The low grounds upon the creek are very wide, sometimes on one side, sometimes on the other; though most commonly upon the opposite shore the high land advances close to the bank, only on the north side of the line it spreads itself into a great breadth of rich low ground on both sides the creek for four miles together, as far as this stream runs into Hico river, whereof I shall presently make mention. One of our men spied three buffaloes, but his piece being loaded only with goose-shot, he was able to make no effectual impression on their thick hides; however, this disappointment was made up by a brace of bucks, and as many wild turkeys, killed by the rest of the company. Thus Providence was very bountiful to our endeavours, never disappointing those that faithfully rely upon it, and pray heartily for their daily bread.

5th. This day we met with such uneven grounds, and thick underwoods, that with all our industry we were able to advance the line but four miles and three hundred and twelve poles. In this small distance it intersected a large stream four times, which our Indian at first mistook for the south branch of Roanoke river; but, discovering his error soon after, he assured us it was a river called Hicootomony, or Turkey-buzzard river, from the great number of those unsavoury birds that roost on the tall trees growing near its banks.

Early in the afternoon, to our very great surprise, the commissioners of Carolina acquainted us with their resolution to return home. This declaration of theirs seemed the more abrupt, because they had not been so kind as to prepare us, by the least hint, of their intention to desert us. We therefore let them understand they appeared to us to abandon the business they came about with too much precipitation, this being but the fifteenth day since we came out the last time. But, although we were to be so unhappy as to lose the assistance of their great abilities, yet we, who were concerned for Virginia, determined, by the grace of God, not to do our work by halves, but, all deserted as we were like to be, should think it our duty to push the line quite to the mountains; and if their government should refuse to be bound by so much of the line as was run without their commissioners, yet at least it would bind Virginia, and stand as a direction how far his majesty's lands extend to the southward. In short, these gentlemen were positive, and the most we could agree upon was to subscribe plots of our work as far as we had

acted together; though at the same time we insisted these plots should be gotten ready by Monday noon at farthest, when we on the part of Virginia intended, if we were alive, to move forward without farther loss of time, the season being then too far advanced to admit of any unnecessary or complaisant delays.

6th. We lay still this day, being Sunday, on the bank of Hico river, and had only prayers, our chaplain not having spirits enough to preach. The gentlemen of Carolina assisted not at our public devotions, because they were taken up all the morning in making a formidable protest against our proceeding on the line without them. When the divine service was over, the surveyors set about making the plots of so much of the line as we had run this last campaign. Our pious friends of Carolina assisted in this work with some seeming scruple, pretending it was a violation of the sabbath, which we were the more surprised at, because it happened to be the first qualm of conscience they had ever been troubled with during the whole journey. They had made no bones of staying from prayers to hammer out an unnecessary protest, though divine service was no sooner over, but an unusual fit of godliness made them fancy that finishing the plots, which was now matter of necessity, was a profanation of the day. However, the expediency of losing no time, for us who thought it our duty to finish what we had undertaken, made such a labour pardonable.

In the afternoon, Mr. Fitzwilliam, one of the commissioners for Virginia, acquainted his colleagues it was his opinion, that by his majesty's order they could not proceed farther on the line, but in conjunction with the commissioners of Carolina; for which reason he intended to retire, the next morning, with those gentlemen. This looked a little odd in our brother commissioner; though, in justice to him, as well as to our Carolina friends, they stuck by us as long as our good liquor lasted, and were so kind to us as to drink our good journey to the mountains in the last bottle we had left.

7th. The duplicates of the plots could not be drawn fair this day before noon, when they were countersigned by the commissioners of each government. Then those of Carolina delivered their protest, which was by this time licked into form, and signed by them all. And we have been so just to them as to set it down at full length in the Appendix, that their reasons for leaving us may appear in their full strength. After having thus adjusted all our affairs with the Carolina commissioners, and kindly supplied them with bread to carry them back, which they hardly deserved at our hands, we took leave both of them and our colleague, Mr. Fitzwilliam. This gentleman had still a stronger reason for hurrying him back to Williamsburg, which was, that neither the general court might lose an able judge, nor himself a double salary, not despairing in the least but he should have the whole pay of commissioner into the bargain, though he did not half the work. This, to be sure, was relying more on the interest of his friends than on the justice of his cause; in which, however, he had the misfortune to miscarry, when it came to be fairly considered.

It was two o'clock in the afternoon before these arduous affairs could be despatched, and then, all forsaken as we were, we held on our course towards the west. But it was our misfortune to meet with so many thickets in this afternoon's work, that we could advance no further than two miles and two hundred and sixty poles. In this small distance we crossed the Hico the fifth time, and quartered near Buffalo creek, so named from the frequent tokens we discovered of that American behemoth. Here the bushes were so intolerably thick, that we were obliged to cover the bread bags with our deer skins, otherwise the joke of one of the Indians must have happened to us in good earnest, that in a few days we must cut up our house to make bags for our

bread, and so be forced to expose our backs in compliment to our bellies. We computed we had then biscuit enough left to last us, with good management, seven weeks longer; and this being our chief dependence, it imported us to be very careful both in the carriage and the distribution of it.

We had now no other drink but what Adam drank in Paradise, though to our comfort we found the water excellent, by the help of which we perceived our appetites to mend, our slumbers to sweeten, the stream of life to run cool and peaceably in our veins, and if ever we dreamed of women, they were kind. Our men killed a very fat buck and several turkeys. These two kinds of meat boiled together, with the addition of a little rice or French barley, made excellent soup, and, what happens rarely in other good things, it never cloyed, no more than an engaging wife would do, by being a constant dish. Our Indian was very superstitious in this matter, and told us, with a face full of concern, that if we continued to boil venison and turkey together, we should for the future kill nothing, because the spirit that presided over the woods would drive all the game out of our sight. But we had the happiness to find this an idle superstition, and though his argument could not convince us, yet our repeated experience at last, with much ado, convinced him. We observed abundance of colt's foot and maiden-hair in many places, and no where a larger quantity than here. They are both excellent pectoral plants, and seem to have greater virtues much in this part of the world than in more northern climates; and I believe it may pass for a rule in botanics, that where any vegetable is planted by the hand of nature, it has more virtue than in places whereto it is transplanted by the curiosity of man.

8th. Notwithstanding we hurried away the surveyors very early, yet the underwoods embarrassed them so much that they could with difficulty advance the line four miles and twenty poles. Our clothes suffered extremely by the bushes, and it was really as much as both our hands could do to preserve our eyes in our heads. Our poor horses, too, could hardly drag their loads through the saplings, which stood so close together that it was necessary for them to draw and carry at the same time. We quartered near a spring of very fine water, as soft as oil and as cold as ice, to make us amends for the want of wine. And our Indian knocked down a very fat doe, just time enough to hinder us from going supperless to bed. The heavy baggage could not come up with us, because of the excessive badness of the ways. This gave us no small uneasiness, but it went worse with the poor men that guarded it. They had nothing in the world with them but dry bread, nor durst they eat any of that, for fear of inflaming their thirst, in a place where they could find no water to quench it. This was, however, the better to be endured, because it was the first fast any one had kept during the whole journey, and then, thanks to the gracious Guardian of the woods! there was no more than a single meal lost to a few of the company. We were entertained this night with the yell of a whole family of wolves, in which we could distinguish the treble, tenor and bass, very clearly. These beasts of prey kept pretty much upon our track, being tempted by the garbage of the creatures we killed every day; for which we were serenaded with their shrill pipes almost every night. This beast is not so untameable as the panther, but the Indians know how to gentle their whelps, and use them about their cabins instead of dogs.

9th. The thickets were hereabouts so impenetrable, that we were obliged, at first setting off this morning, to order four pioneers to clear the way before the surveyors. But, after about two miles of these rough woods, we had the pleasure to meet with open grounds and not very uneven, by the help of which we were enabled to push the line about six miles. The baggage that lay short of our camp last night came up about noon, and the men made

heavy complaints, that they had been half starved, like Tantalus, in the midst of plenty, for the reason above mentioned.

The soil we past over this day was generally very good, being clothed with large trees, of poplar, hickory and oak. But another certain token of its fertility was, that wild angelica grew plentifully upon it. The root of this plant, being very warm and aromatic, is coveted by woodsmen extremely as a dry dram, that is, when rum, that cordial for all distresses, is wanting. Several deer came into our view as we marched along, but none into the pot, which made it necessary for us to sup on the fragments we had been so provident as to carry along with us. This being but a temperate repast, made some of our hungry fellows call the place we lodged at that night, Bread and Water Camp.

A great flock of cranes flew over our quarters, that were exceeding clamorous in their flight. They seem to steer their course towards the south (being birds of passage) in quest of warmer weather. They only took this country in their way, being as rarely met with, in this part of the world, as a highwayman or a beggar. These birds travel generally in flocks, and when they roost they place sentinels upon some of the highest trees, which constantly stand upon one leg to keep themselves waking.\*

Our Indian killed nothing all day but a mountain partridge, which a little resembled the common partridge in the plumage, but was near as large as a dunghill hen. These are very frequent towards the mountains, though we had the fortune to meet with very few. They are apt to be shy, and consequently the noise of so great a number of people might easily scare them away from our sight. We found what we conceived to be good limestone in several places, and a great quantity of blue slate.

10th. The day began very fortunately by killing a fat doe, and two brace of wild turkeys; so the plenty of the morning made amends for the short commons over night. One of the new men we brought out with us the last time was unfortunately heard to wish himself at home, and for that show of impatience was publicly reprimanded at the head of the men, who were all drawn up to witness his disgrace. He was asked how he came so soon to be tired of the company of so many brave fellows, and whether it was the danger or the fatigue of the journey that disheartened him? This public reproof from thenceforward put an effectual stop to all complaints, and not a man amongst us after that pretended so much as to wish himself in Paradise. A small distance from our camp we crossed a pleasant stream of water called Cocquade creek, and something more than a mile from thence our line intersected the south branch of Roanoke river the first time, which we called the Dan. It was about two hundred yards wide where we forded it, and when we came over to the west side, we found the banks lined with a forest of tall canes, that grew more than a furlong in depth. So that it cost us abundance of time and labour to cut a passage through them wide enough for our baggage. In the mean time we had leisure to take a full view of this charming river. The stream, which was perfectly clear, ran down about

\* Nor are these birds the only animals that appoint scouts to keep the main body from being surprised. For the baboons, whenever they go upon any mischievous expedition, such as robbing an orchard, place sentinels to look out towards every point of the compass, and give notice of any danger. Then ranking themselves in one file, that reaches from the mountain where they harbour, to the orchard they intend to rob, some of them toss the fruits from the trees to those that stand nearest, these throw them to the next, and so from one to the other, till the fruit is all secured in a few minutes out of harm's way. In the mean time, if any of the scouts should be careless at their posts, and suffer any surprise, they are torn to pieces without mercy. In case of danger these sentinels set up a fearful cry, upon which the rest take the alarm, and scour away to the mountains as fast as they can.

two knots, or two miles, an hour, when the water was at the lowest. The bottom was covered with a coarse gravel, spangled very thick with a shining substance, that almost dazzled the eye, and the sand upon either shore sparkled with the same splendid particles. At first sight, the sunbeams giving a yellow cast to these spangles made us fancy them to be gold dust, and consequently that all our fortunes were made. Such hopes as these were the less extravagant, because several rivers lying much about the same latitude with this have formerly abounded with fragments of that tempting metal. Witness the Tagus in Portugal, the Heber in Thrace, and the Pactolus in Lesser Asia; not to mention the rivers on the Gold Coast in Africa, which lie in a more southern climate. But we soon found ourselves mistaken, and our gold dust dwindled into small flakes of isinglass. However, though this did not make the river so rich as we could wish, yet it made it exceedingly beautiful. We marched about two miles and a half beyond this river, as far as Cane creek, so called from a prodigious quantity of tall canes that fringed the banks of it. On the west side of this creek we marked out our quarters, and were glad to find our horses fond of the canes, though they scoured them smartly at first, and discoloured their dung. This beautiful vegetable grows commonly from twelve to sixteen feet high, and some of them as thick as a man's wrist. Though these appeared large to us, yet they are no more than spires of grass, if compared to those which some curious travellers tell us grow in the East Indies, one joint of which will make a brace of canoes, if sawed in two in the middle. Ours continue green through all the seasons during the space of six years, and the seventh shed their seed, wither away and die. The spring following they begin to shoot again, and reach their former stature the second or third year after. They grow so thick, and their roots lace together so firmly, that they are the best guard that can be of the river bank, which would otherwise be washed away by the frequent inundations that happen in this part of the world. They would also serve excellently well to plant on the borders of fish-ponds and canals, to secure their sides from falling in; though I fear they would not grow kindly in a cold country, being seldom seen here so northerly as thirty-eight degrees of latitude.

11th. At the distance of four miles and sixty poles from the place where we encamped, we came upon the river Dan a second time; though it was not so wide in this place as where we crossed it first, being not above a hundred and fifty yards over. The west shore continued to be covered with the canes above mentioned, but not to so great a breadth as before, and it is remarkable that these canes are much more frequent on the west side of the river than on the east, where they grow generally very scattering. It was still a beautiful stream, rolling down its limpid and murmuring waters among the rocks, which lay scattered here and there, to make up the variety of the prospect. It was about two miles from this river to the end of our day's work, which led us mostly over broken grounds and troublesome underwoods. Hereabout, from one of the highest hills, we made the first discovery of the mountains, on the north-west of our course. They seemed to lie off at a vast distance, and looked like ranges of blue clouds rising one above another. We encamped about two miles beyond the river, where we made good cheer upon a very fat buck, that luckily fell in our way. The Indian likewise shot a wild turkey, but confessed he would not bring it us, lest we should continue to provoke the guardian of the forest, by cooking the beasts of the field and the birds of the air together in one vessel. This instance of Indian superstition, I confess, is countenanced in some measure by the Levitical law, which forbade the mixing things of a different nature together in the same field, or in the same garment, and why not then in the same kettle? But, after all, if the

jumbling of two sorts of flesh together be a sin, how intolerable an offence must it be to make a Spanish olla, that is, a hotchpotch of every kind of thing that is eatable? And the good people of England would have a great deal to answer for, for beating up so many different ingredients into a pudding.

12th. We were so cruelly entangled with bushes and grape-vines all day, that we could advance the line no farther than five miles and twenty-eight poles. The vines grow very thick in these woods, twining lovingly round the trees almost every where, especially to the saplings. This makes it evident how natural both the soil and climate of this country are to vines, though I believe most to our own vines. The grapes we commonly met with were black, though there be two or three kinds of white grapes that grow wild. The black are very sweet, but small, because the strength of the vine spends itself in wood; though without question a proper culture would make the same grapes both larger and sweeter. But, with all these disadvantages, I have drunk tolerable good wine pressed from them, though made without skill. There is then good reason to believe it might admit of great improvement, if rightly managed. Our Indian killed a bear, two years old, that was feasting on these grapes. He was very fat, as they generally are in that season of the year. In the fall, the flesh of this animal has a high relish, different from that of other creatures, though inclining nearest to that of pork, or rather of wild boar. A true woodsman prefers this sort of meat to that of the fattest venison, not only for the *haut gout*, but also because the fat of it is well tasted, and never rises in the stomach. Another proof of the goodness of this meat is, that it is less apt to corrupt than any other with which we are acquainted. As agreeable as such rich diet was to the men, yet we who were not accustomed to it, tasted it at first with some sort of squeamishness, that animal being of the dog kind; though a little use soon reconciled us to this American venison. And that its being of the dog kind might give us the less disgust, we had the example of that ancient and polite people, the Chinese, who reckon dog's flesh too good for any under the quality of a mandarin. This beast is in truth a very clean feeder, living, while the season lasts, upon acorns, chestnuts and chinquapins, wild honey and wild grapes. They are naturally not carnivorous, unless hunger constrain them to it, after the mast is all gone, and the product of the woods quite exhausted. They are not provident enough to lay up any hoard, like the squirrels, nor can they, after all, live very long upon licking their paws, as sir John Mandevil and some other travellers tell us, but are forced in the winter months to quit the mountains, and visit the inhabitants. Their errand is then to surprise a poor hog at a pinch to keep them from starving. And to show that they are not flesh-eaters by trade, they devour their prey very awkwardly. They do not kill it right out, and feast upon its blood and entrails, like other ravenous beasts, but having, after a fair pursuit, seized it with their paws, they begin first upon the rump, and so devour one collop after another, till they come to the vital's, the poor animal crying all the while, for several minutes together. However, in so doing, Bruin acts a little imprudently, because the dismal outcry of the hog alarms the neighbourhood, and it is odds but he pays the forfeit with his life, before he can secure his retreat. But bears soon grow weary of this unnatural diet, and about January, when there is nothing to be gotten in the woods, they retire into some cave or hollow tree, where they sleep away two or three months very comfortably. But then they quit their holes in March, when the fish begin to run up the rivers, on which they are forced to keep Lent, till some fruit or berry comes in season. But bears are fondest of chestnuts, which grow plentifully towards the mountains, upon very large trees, where the soil happens to be rich. We were curious to know how it happened that many of the outward branches of those trees came to be broken



off in that solitary place, and were informed that the bears are so discreet as not to trust their unwieldy bodies on the smaller limbs of the tree, that would not bear their weight; but after venturing as far as is safe, which they can judge to an inch, they bite off the end of the branch, which falling down, they are content to finish their repast upon the ground. In the same cautious manner they secure the acorns that grow on the weaker limbs of the oak. And it must be allowed that, in these instances, a bear carries instinct a great way, and acts more reasonably than many of his betters, who indiscreetly venture upon frail projects that will not bear them.

13th. This being Sunday, we rested from our fatigue, and had leisure to reflect on the signal mercies of Providence.

The great plenty of meat wherewith Bearskin furnished us in these lonely woods made us once more shorten the men's allowance of bread, from five to four pounds of biscuit a week. This was the more necessary, because we knew not yet how long our business might require us to be out.

In the afternoon our hunters went forth, and returned triumphantly with three brace of wild turkeys. They told us they could see the mountains distinctly from every eminence, though the atmosphere was so thick with smoke that they appeared at a greater distance than they really were.

In the evening we examined our friend Bearskin, concerning the religion of his country, and he explained it to us, without any of that reserve to which his nation is subject. He told us he believed there was one supreme God, who had several subaltern deities under him. And that this master God made the world a long time ago. That he told the sun, the moon, and stars, their business in the beginning, which they, with good looking after, have faithfully performed ever since. That the same Power that made all things at first has taken care to keep them in the same method and motion ever since. He believed that God had formed many worlds before he formed this, but that those worlds either grew old and ruinous, or were destroyed for the dishonesty of the inhabitants. That God is very just and very good—ever well pleased with those men who possess those god-like qualities. That he takes good people into his safe protection, makes them very rich, fills their bellies plentifully, preserves them from sickness, and from being surprised or overcome by their enemies. But all such as tell lies, and cheat those they have dealings with, he never fails to punish with sickness, poverty and hunger, and, after all that, suffers them to be knocked on the head and scalped by those that fight against them. He believed that after death both good and bad people are conducted by a strong guard into a great road, in which departed souls travel together for some time, till at a certain distance this road forks into two paths, the one extremely level, and the other stony and mountainous. Here the good are parted from the bad by a flash of lightning, the first being hurried away to the right, the other to the left. The right hand road leads to a charming warm country, where the spring is everlasting, and every month is May; and as the year is always in its youth, so are the people, and particularly the women are bright as stars, and never scold. That in this happy climate there are deer, turkeys, elks, and buffaloes innumerable, perpetually fat and gentle, while the trees are loaded with delicious fruit quite throughout the four seasons. That the soil brings forth corn spontaneously, without the curse of labour, and so very wholesome, that none who have the happiness to eat of it are ever sick, grow old, or die. Near the entrance into this blessed land sits a venerable old man on a mat richly woven, who examines strictly all that are brought before him, and if they have behaved well, the guards are ordered to open the crystal gate, and let them enter into the land of delight. The left hand path is very rugged and uneven, leading to a dark and barren country, where it is always winter. The ground is the whole year round covered

with snow, and nothing is to be seen upon the trees but icicles. All the people are hungry, yet have not a morsel of any thing to eat, except a bitter kind of potato, that gives them the dry gripes, and fills their whole body with loathsome ulcers, that stink, and are insupportably painful. Here all the women are old and ugly, having claws like a panther, with which they fly upon the men that slight their passion. For it seems these haggard old furies are intolerably fond, and expect a vast deal of cherishing. They talk much, and exceedingly shrill, giving exquisite pain to the drum of the ear, which in that place of torment is so tender, that every sharp note wounds it to the quick. At the end of this path sits a dreadful old woman on a monstrous toad-stool, whose head is covered with rattle-snakes instead of tresses, with glaring white eyes, that strike a terror unspeakable into all that behold her. This hag pronounces sentence of woe upon all the miserable wretches that hold up their hands at her tribunal. After this they are delivered over to huge turkey-buzzards, like harpies, that fly away with them to the place above mentioned. Here, after they have been tormented a certain number of years, according to their several degrees of guilt, they are again driven back into this world, to try if they will mend their manners, and merit a place the next time in the regions of bliss. This was the substance of Bearskin's religion, and was as much to the purpose as could be expected from a mere state of nature, without one glimpse of revelation or philosophy. It contained, however, the three great articles of natural religion: the belief of a God; the moral distinction betwixt good and evil; and the expectation of rewards and punishments in another world. Indeed, the Indian notion of a future happiness is a little gross and sensual, like Mahomet's paradise. But how can it be otherwise, in a people that are contented with Nature as they find her, and have no other lights but what they receive from purblind tradition?

14th. There having been great signs of rain yesterday evening, we had taken our precautions in securing the bread, and trenching in our tent. The men had also stretched their blankets upon poles, pent-house fashion, against the weather, so that nobody was taken unprepared. It began to fall heavily about three o'clock in the morning, and held not up till near noon. Every thing was so thoroughly soaked, that we laid aside all thoughts of decamping that day. This gave leisure to the most expert of our gunners to go and try their fortunes, and they succeeded so well, that they returned about noon with three fat deer, and four wild turkeys. Thus Providence took care of us, and however short the men might be in their bread, it is certain they had meat at full allowance. The cookery went on merrily all night long, to keep the damps from entering our pores; and in truth the impressions of the air are much more powerful upon empty stomachs. In such a glut of provisions, a true woodsman, when he has nothing else to do, like our honest countrymen the Indians, keeps eating on, to avoid the imputation of idleness; though, in a scarcity, the Indian will fast with a much better grace than they. They can subsist several days upon a little rockahominy, which is parched Indian corn reduced to powder. This they moisten in the hollow of their hands with a little water, and it is hardly credible how small a quantity of it will support them. It is true they grow a little lank upon it, but to make themselves feel full, they gird up their loins very tight with a belt, taking up a hole every day. With this slender subsistence they are able to travel very long journeys; but then, to make themselves amends, when they do meet with better cheer, they eat without ceasing, till they have ravened themselves into another famine.

This was the first time we had ever been detained a whole day in our camp by the rain, and therefore had reason to bear it with the more patience

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The few good husbands amongst us took some thought of their backs as well as their bellies, and made use of this opportunity to put their habiliments in repair, which had suffered wofully by the bushes. The horses got some rest, by reason of the bad weather, but very little food, the chief of their forage being a little wild rosemary, which resembles the garden rosemary pretty much in figure, but not at all in taste or smell. This plant grows in small tufts here and there on the barren land in these upper parts, and the horses liked it well, but the misfortune was, they could not get enough of it to fill their bellies.

15th. After the clouds broke away in the morning, the people dried their blankets with all diligence. Nevertheless, it was noon before we were in condition to move forward, and then were so puzzled with passing the river twice in a small distance, that we could advance the line in all no further than one single mile and three hundred poles. The first time we passed the Dan this day was two hundred and forty poles from the place where we lay, and the second time was one mile and seven poles beyond that. This was now the fourth time we forded that fine river, which still tended westerly, with many short and returning reaches.

The surveyors had much difficulty in getting over the river, finding it deeper than formerly. The breadth of it here did not exceed fifty yards. The banks were about twenty feet high from the water, and beautifully beset with canes. Our baggage horses crossed not the river here at all, but, fetching a compass, went round the bend of it. On our way we forded Sable creek, so called from the dark colour of the water, which happened, I suppose, by its being shaded on both sides with canes.

In the evening we quartered in a charming situation near the angle of the river, from whence our eyes were carried down both reaches, which kept a straight course for a great way together. This prospect was so beautiful, that we were perpetually climbing up to a neighbouring eminence, that we might enjoy it in more perfection.

Now the weather grew cool, the wild geese began to direct their flight this way from Hudson's bay, and the lakes that lay north-west of us. They are very lean at their first coming, but fatten soon upon a sort of grass that grows on the shores and rocks of this river. The Indians call this fowl cohunks, from the hoarse note it has, and begin the year from the coming of the cohunks, which happens in the beginning of October. These wild geese are guarded from cold by a down, that is exquisitely soft and fine, which makes them much more valuable for their feathers than for their flesh, which is dark and coarse.

The men chased a bear into the river that got safe over, notwithstanding the continual fire from the shore upon him. He seemed to swim but heavily, considering it was for his life. Where the water is shallow, it is no uncommon thing to see a bear sitting, in the summer time, on a heap of gravel in the middle of the river, not only to cool himself, but likewise for the advantage of fishing, particularly for a small shell-fish, that is brought down with the stream. In the upper part of James river I have observed this several times, and wondered very much, at first, how so many heaps of small stones came to be piled up in the water, till at last we spied a bear sitting upon one of them, looking with great attention on the stream, and raking up something with his paw, which I take to be the shell-fish above mentioned.

16th. It was ten o'clock this morning before the horses could be found, having hidden themselves among the canes, whereof there was great plenty just at hand. Not far from our camp we went over a brook, whose banks were edged on both sides with these canes. But three miles further we

forded a larger stream, which we called Lowland creek, by reason of the great breadth of low grounds inclosed between that and the river.

The high land we travelled over was very good, and the low grounds promised the greatest fertility of any I had ever seen. At the end of four miles and three hundred and eleven poles from where we lay, the line intersected the Dan the fifth time. We had day enough to carry it farther, but the surveyors could find no safe ford over the river. This obliged us to ride two miles up the river in quest of a ford, and by the way we traversed several small Indian fields, where we conjectured the Sawroes had been used to plant corn, the town where they had lived lying seven or eight miles more southerly, upon the eastern side of the river. These Indian fields produced a sweet kind of grass, almost knee-high, which was excellent forage for the horses. It must be observed, by the way, that Indian towns, like religious houses, are remarkable for a fruitful situation; for being by nature not very industrious, they choose such a situation as will subsist them with the least labour. The trees grew surprisingly large in this low ground, and amongst the rest we observed a tall kind of hickory, peculiar to the upper parts of the country. It is covered with a very rough bark, and produces a nut with a thick shell that is easily broken. The kernel is not so rank as that of the common hickory, but altogether as oily. And now I am upon the subject of these nuts, it may not be improper to remark, that a very great benefit might be made of nut-oil in this colony. The walnuts, the hickory-nuts, and pig-nuts, contain a vast deal of oil, that might be pressed out in great abundance, with proper machines. The trees grow very kindly, and may be easily propagated. They bear plenty of nuts every year, that are now of no other use in the world but to feed hogs. It is certain there is a large consumption of this oil in several of our manufactures, and in some parts of France, as well as in other countries, it is eaten instead of oil-olive, being tolerably sweet and wholesome. The Indian killed a fat buck, and the men brought in four bears and a brace of wild turkeys, so that this was truly a land of plenty, both for man and beast.

17th. We detached a party of men this morning early in search of a ford, who after all could find none that was safe; though, dangerous as it was, we determined to make use of it, to avoid all further delay. Accordingly we rode over a narrow ledge of rocks, some of which lay below the surface of the water, and some above it. Those that lay under the water were as slippery as ice; and the current glided over them so swiftly, that though it was only water, it made us perfectly drunk. Yet we were all so fortunate as to get safe over to the west shore, with no other damage than the sopping some of our bread by the flouncing of the horses. The tedious time spent in finding out this ford, and in getting all the horses over it, prevented our carrying the line more than two miles and two hundred and fifty poles. This was the last time we crossed the Dan with our line, which now began to run away more southerly, with a very flush and plentiful stream, the description whereof must be left to future discoveries, though we are well assured by the Indians that it runs through the mountains. We conducted the baggage a roundabout way for the benefit of evener grounds, and this carried us over a broad level of exceeding rich land, full of large trees, with vines married to them, if I may be allowed to speak so poetically. We untreed a young cub in our march, that made a brave stand against one of the best of our dogs. This and a fawn were all the game that came in our way. In this day's journey, as in many others before, we saw beautiful marble of several colours, and particularly that of the purple kind with white streaks, and in some places we came across large pieces of pure alabaster.

We marked out our quarters on the banks of a purling stream, which we called Cascade creek, by reason of the multitude of water-falls that are in it. But, different from all other falls that ever I met with, the rocks over which the water rolled were soft, and would split easily into broad flakes, very proper for pavement; and some fragments of it seemed soft enough for hones, and the grain fine enough. Near our camp we found a prickly shrub, rising about a foot from the ground, something like that which bears the barberry, though much smaller. The leaves had a fresh, agreeable smell, and I am persuaded the ladies would be apt to fancy a tea made of them, provided they were told how far it came, and at the same time were obliged to buy it very dear. About a mile to the south-west of our camp rose a regular mount, that commanded a full prospect of the mountains, and an extensive view of the flat country. But being, with respect to the high mountains, no more than a pimple, we called it by that name. Presently after sunset we discovered a great light towards the west, too bright for a fire, and more resembling the aurora borealis. This, all our woodsmen told us, was a common appearance in the high lands, and generally foreboded bad weather. Their explanation happened to be exactly true, for in the night we had a violent gale of wind, accompanied with smart hail, that rattled frightfully amongst the trees, though it was not large enough to do us any harm.

We crossed Cascade creek over a ledge of smooth rocks, and then scuffled through a mighty thicket, at least three miles long. The whole was one continued tract of rich high land, the woods whereof had been burnt not long before. It was then overgrown with saplings of oak, hickory and locust, interlaced with grape vines. In this fine land, however, we met with no water, till at the end of three miles we luckily came upon a crystal stream, which, like some lovers of conversation, discovered every thing committed to its faithless bosom. Then we came upon a piece of rich low ground, covered with large trees, of the extent of half a mile, which made us fancy ourselves not far from the river; though after that we ascended gently to higher land, with no other trees growing upon it except butter-wood, which is one species of white maple. This being a dead level, without the least declivity to carry off the water, was moist in many places, and produced abundance of grass. All our woodsmen call these flat grounds high land ponds, and in their trading journeys are glad to halt at such places for several days together, to recruit their jaded horses, especially in the winter months, when there is little or no grass to be found in other places. This high land pond extended above two miles, our palfries snatching greedily at the tufts of grass, as they went along. After we got over this level, we descended some stony hills for about half a mile, and then came upon a large branch of the river, which we christened the Irvin, in honour of our learned professor. This river we forded with much difficulty and some danger, by reason of the hollow spaces betwixt the rocks, into which our horses plunged almost every step. The Irvin runs into the Dan about four miles to the southward of the line, and seemed to roll down its waters from the N. N. W. in a very full and limpid stream, and the murmur it made, in tumbling over the rocks, caused the situation to appear very romantic, and had almost made some of the company poetical, though they drank nothing but water. We encamped on a pleasant hill, overlooking the river, which seemed to be deep every where except just where we forded. In the mean time, neither that chain of rocks, nor any other that we could observe in this stream, was so uninterrupted, but that there were several breaks where a canoe, or even a moderate flat-bottomed boat, might shear clear. Nor have we reason to believe there are any other falls (except the great ones, thirty miles below Monisep ford) that reach quite across, so as to interrupt the navigation for small craft. And I have been informed that, even at those

great falls, the blowing up a few rocks would open a passage at least for canoes, which certainly would be an unspeakable convenience to the inhabitants of all that beautiful part of the country. The Indian killed a very fat doe, and came across a bear, which had been put to death and was half devoured by a panther. The last of these brutes reigns absolute monarch of the woods, and in the keenness of his hunger will venture to attack a bear; though then it is ever by surprise, as all beasts of the cat kind use to come upon their prey. Their play is to take the poor bears napping, they being very drowsy animals, and though they be exceedingly strong, yet their strength is heavy, while the panthers are too nimble and cunning to trust themselves within their hug. As formidable as this beast is to his fellow brutes, he never has the confidence to venture upon a man, but retires from him with great respect, if there be a way open for his escape. However, it must be confessed, his voice is a little contemptible for a monarch of the forest, being not a great deal louder nor more awful than the mewling of a household cat.\*

In South Carolina they call this beast a tiger, though improperly, and so they do in some parts of the Spanish West Indies. Some of their authors, a little more properly, compliment it with the name of a leopard. But none of these are the growth of America, that we know of.

The whole distance the surveyors advanced the line this day amounted to six miles and thirty poles, which was no small journey, considering the grounds we had traversed were exceedingly rough and uneven, and in many places intolerably entangled with bushes. All the hills we ascended were encumbered with stones, many of which seemed to contain a metallic substance, and the valleys we crossed were interrupted with miry branches. From the top of every hill we could discern distinctly, at a great distance to the northward, three or four ledges of mountains, rising one above another; and on the highest of all rose a single mountain, very much resembling a woman's breast.

19th. About four miles beyond the river Irvin, we forded Matrimony creek, called so by an unfortunate married man, because it was exceedingly noisy and impetuous. However, though the stream was clamorous, yet, like those women who make themselves plainest heard, it was likewise perfectly clear and unsullied. Still half a mile further we saw a small mountain, about five miles to the north-west of us, which we called the Wart, because it appeared no bigger than a wart, in comparison of the great mountains which hid their haughty heads in the clouds. We were not able to extend the line farther than five miles and one hundred and thirty five poles, notwithstanding we began our march early in the morning, and did not encamp till it was almost dark. We made it the later by endeavouring to quarter in some convenient situation, either for grass or canes. But night surprising us, we were obliged to lodge at last upon high and uneven ground, which was so overgrown with shrubs and saplings, that we could hardly see ten yards around us. The most melancholy part of the story was, that our horses had short commons. The poor creatures were now grown so weak that they staggered when we mounted them. Nor would our own fare have been at all more plentiful, had we not been so provident as to carry a load of meat along with us. Indeed, the woods were too thick to show us any sort of game but one wild turkey, which helped to enrich our soup. To make us amends, we found

\* Some authors, who have given an account of the southern continent of America, would make the world believe there are lions; but in all likelihood they were mistaken, imagining these panthers to be lions. What makes this probable is, that the northern and southern parts of America being joined by the Isthmus of Darien, if there were lions in either they would find their way into the other, the latitudes of each being equally proper for that generous animal.

abundance of very sweet grapes, which, with the help of bread, might have furnished out a good Italian repast, in the absence of more savoury food. The men's mouths watered at the sight of a prodigious flight of wild pigeons, which flew high over our heads to the southward. The flocks of these birds of passage are so amazingly great, sometimes, that they darken the sky; nor is it uncommon for them to light in such numbers in the larger limbs of mulberry trees and oaks as to break them down. In their travels they make vast havoc amongst the acorns and berries of all sorts, that they waste whole forests in a short time, and leave a famine behind them for most other creatures; and under some trees where they light, it is no strange thing to find the ground covered three inches thick with their dung. These wild pigeons commonly breed in the uninhabited parts of Canada, and as the cold approaches assemble their armies and bend their course southerly, shifting their quarters, like many of the winged kind, according to the season. But the most remarkable thing in their flight, as we are told, is that they never have been observed to return to the northern countries the same way they came from thence, but take quite another route, I suppose for their better subsistence. In these long flights they are very lean, and their flesh is far from being white or tender, though good enough upon a march, when hunger is the sauce, and makes it go down better than truffles and morels would do.

20th. It was now Sunday, which we had like to have spent in fasting as well as prayer; for our men, taking no care for the morrow, like good Christians, but bad travellers, had improvidently devoured all their meat for supper. They were ordered in the morning to drive up their horses, lest they should stray too far from the camp and be lost, in case they were let alone all day. At their return they had the very great comfort to behold a monstrous fat bear, which the Indian had killed very seasonably for their breakfast. We thought it still necessary to make another reduction of our bread, from four to three pounds a week to every man, computing that we had still enough in that proportion to last us three weeks longer. The atmosphere was so smoky all round us, that the mountains were again grown invisible. This happened not from the haziness of the sky, but from the firing of the woods by the Indians, for we were now near the route the northern savages take when they go out to war against the Catawbas and other southern nations. On their way the fires they make in their camps are left burning, which, catching the dry leaves that lie near, soon put the adjacent woods into a flame. Some of our men in search of their horses discovered one of those Indian camps, where not long before they had been a furring and dressing their skins. And now I mention the northern Indians, it may not be improper to take notice of their implacable hatred to those of the south. Their wars are everlasting, without any peace, enmity being the only inheritance among them that descends from father to son, and either party will march a thousand miles to take their revenge upon such hereditary enemies. These long expeditions are commonly carried on in the following manner; some Indian, remarkable for his prowess, that has raised himself to the reputation of a war captain, declares his intention of paying a visit to some southern nation; hereupon as many of the young fellows as have either a strong thirst of blood or glory, list themselves under his command. With these volunteers he goes from one confederate town to another, listing all the rabble he can, till he has gathered together a competent number for mischief. Their arms are a gun and tomahawk, and all the provisions they carry from home is a pouch of rockahominy. Thus provided and accoutred, they march towards their enemy's country, not in a body, or by a certain path, but straggling in small numbers, for the greater convenience of hunting and passing along undiscovered.



So soon as they approach the grounds on which the enemy is used to hunt, they never kindle any fire themselves, for fear of being found out by the smoke, nor will they shoot at any kind of game, though they should be half famished, lest they might alarm their foes, and put them upon their guard. Sometimes indeed, while they are still at some distance, they roast either venison or bear, till it is very dry, and then having strung it on their belts, wear it round their middle, eating very sparingly of it, because they know not when they shall meet with a fresh supply. But coming nearer, they begin to look all round the hemisphere, to watch if any smoke ascends, and listen continually for the report of guns, in order to make some happy discovery for their own advantage. It is amazing to see their sagacity in discerning the track of a human foot, even amongst dry leaves, which to our shorter sight is quite undiscoverable. If by one or more of those signs they be able to find out the camp of any southern Indians, they squat down in some thicket, and keep themselves hush and snug till it is dark; then creeping up softly, they approach near enough to observe all the motions of the enemy. And about two o'clock in the morning, when they conceive them to be in a profound sleep, for they never keep watch and ward, pour in a volley upon them, each singling out his man. The moment they have discharged their pieces, they rush in with their tomahawks, and make sure work of all that are disabled. Sometimes, when they find the enemy asleep round their little fire, they first pelt them with little stones to wake them, and when they get up, fire in upon them, being in that posture a better mark than when prostrate on the ground. Those that are killed of the enemy, or disabled, they scalp, that is, they cut the skin all round the head just below the hair, and then clapping their feet to the poor mortals' shoulders, pull the scalp off clean, and carry it home in triumph, being as proud of those trophies, as the Jews used to be of the foreskins of the Philistines. This way of scalping was practised by the ancient Scythians, who used these hairy scalps as towels at home, and trappings for their horses when they went abroad. They also made cups of their enemies' skulls, in which they drank prosperity to their country, and confusion to all their foes. The prisoners they happen to take alive in these expeditions generally pass their time very scurvily. They put them to all the tortures that ingenious malice and cruelty can invent. And (what shows the baseness of the Indian temper in perfection) they never fail to treat those with greatest inhumanity, that have distinguished themselves most by their bravery; and, if he be a war captain, they do him the honour to roast him alive, and distribute a collop to all that had a share in stealing the victory.\*

They are very cunning in finding out new ways to torment their unhappy captives, though, like those of hell, their usual method is by fire. Sometimes they barbecue them over live coals, taking them off every now and then, to prolong their misery; at other times they will stick sharp pieces of lightwood all over their bodies, and setting them on fire, let them burn down into the flesh to the very bone. And when they take a stout fellow, that they believe able to endure a great deal, they will tear all the flesh off his bones with red hot pincers. While these and such like barbarities are practising, the victors are so far from being touched with tenderness and compassion, that they

\* Though who can reproach the poor Indians for this, when Homer makes his celebrated hero, Achilles, drag the body of Hector at the tail of his chariot, for having fought gallantly in defence of his country. Nor was Alexander the Great, with all his famed generosity, less inhuman to the brave Tyrians, two thousand of whom he ordered to be crucified in cold blood, for no other fault but for having defended their city most courageously against him, during a siege of seven months. And what was still more brutal, he dragged alive — at the tail of his chariot, through all the streets, for defending the town with so much vigour.

dance and sing round these wretched mortals, showing all the marks of pleasure and jollity. And if such cruelties happen to be executed in their towns, they employ their children in tormenting the prisoners, in order to extinguish in them betimes all sentiments of humanity. In the mean time, while these poor wretches are under the anguish of all this inhuman treatment, they disdain so much as to groan, sigh, or show the least sign of dismay or concern, so much as in their looks; on the contrary, they make it a point of honour all the time to soften their features, and look as pleased as if they were in the actual enjoyment of some delight; and if they never sang before in their lives, they will be sure to be melodious on this sad and dismal occasion. So prodigious a degree of passive valour in the Indians is the more to be wondered at, because in all articles of danger they are apt to behave like cowards. And what is still more surprising, the very women discover, on such occasions, as great fortitude and contempt, both of pain and death, as the gallantest of their men can do.

21st. The apprehensions we had of losing the horses in these copse woods were too well founded, nor were the precautions we used yesterday of driving them up sufficient to prevent their straying away afterwards, notwithstanding they were securely hobbled. We therefore ordered the men out early this morning to look diligently for them, but it was late before any could be found. It seems they had straggled in quest of forage, and, besides all that, the bushes grew thick enough to conceal them from being seen at the smallest distance. One of the people was so bewildered in search of his horse, that he lost himself, being no great forester. However, because we were willing to save time, we left two of our most expert woodsmen behind to beat all the adjacent woods in quest of him.

In the mean while the surveyors proceeded vigorously on their business, but were so perplexed with thickets at their first setting off, that their progress was much retarded. They were no sooner over that difficulty, but they were obliged to encounter another. The rest of their day's work lay over very sharp hills, where the dry leaves were so slippery that there was hardly any hold for their feet. Such rubs as these prevented them from measuring more than four miles and two hundred and seventy poles. Upon the sides of these hills the soil was rich, though full of stones, and the trees reasonably large.

The smoke continued still to veil the mountains from our sight, which made us long for rain, or a brisk gale of wind, to disperse it. Nor was the loss of this wild prospect all our concern, but we were apprehensive lest the woods should be burnt in the course of our line before us, or happen to take fire behind us, either of which would effectually have starved the horses, and made us all foot soldiers. But we were so happy, thank God! as to escape this misfortune in every part of our progress. We were exceedingly uneasy about our lost man, knowing he had taken no provision of any kind, nor was it much advantage towards his support, that he had taken his gun along with him, because he had rarely been guilty of putting any thing to death. He had unluckily wandered from the camp several miles, and after steering sundry unsuccessful courses, in order to return, either to us or to the line, was at length so tired he could go no farther. In this distress he sat himself down under a tree, to recruit his jaded spirit, and at the same time indulge a few melancholy reflections. Famine was the first phantom that appeared to him, and was the more frightful, because he fancied himself not quite bear enough to subsist long upon licking his paws. In the mean time the two persons we had sent after him hunted diligently great part of the day without coming upon his track. They fired their pieces towards every point of the compass, but could perceive no firing in return. However, advancing a

little farther, at last they made a lucky shot, that our straggler had the good fortune to hear, and he returning the salute, they soon found each other with no small satisfaction. But though they lighted on the man, they could by no means light on his horse, and therefore he was obliged to be a foot soldier all the rest of the journey. Our Indian shot a bear so prodigiously fat, that there was no way to kill him but by firing in at his ear. The fore part of the skull of that animal being guarded by a double bone, is hardly penetrable, and when it is very fat, a bullet aimed at his body is apt to lose its force, before it reaches the vitals. This animal is of the dog kind, and our Indians, as well as woodsmen, are as fond of its flesh as the Chinese can be of that of the common hound.

22d. Early in the morning we sent back two men to make further search for the horse that was strayed away. We were unwilling the poor man should sustain such a damage as would eat out a large part of his pay, or that the public should be at the expense of reimbursing him for it. These foresters hunted all over the neighbouring woods, and took as much pains as if the horse had been their own property, but all their diligence was to no purpose. The surveyors, in the mean time, being fearful of leaving these men too far behind, advanced the line no farther than one mile and two hundred and thirty poles. As we rode along we found no less than three bears and a fat doe, that our Indian, who went out before us, had thrown in our course, and we were very glad to pick them up. About a mile from the camp we crossed Miry creek, so called because several of the horses were mired in its branches. About two hundred and thirty poles beyond that, the line intersected another river, that seemed to be a branch of the Irvin, to which we gave the name of the Mayo, in complement to the offer of our surveyors. It was about fifty yards wide where we forded it, being just below a ledge of rocks, which reached across the river, and made a natural cascade. Our horses could hardly keep their feet over these slippery rocks, which gave some of their riders no small palpitation. This river forks about a quarter of a mile below the ford, and has some scattering canes growing near the mouth of it. We pitched our tent on the western banks of the Mayo, for the pleasure of being lulled to sleep by the cascade. Here our hunters had leisure to go out and try their fortunes, and returned loaded with spoil. They brought in no less than six bears, exceedingly fat, so that the frying pan had no rest all night. We had now the opportunity of trying the speed of this lumpish animal by a fair course it had with the nimblest of our surveyors. A cub of a year old will run very fast, because, being upon his growth, he is never encumbered with too much fat; but the old ones are more sluggish and unwieldy, especially when mast is plenty. Then their nimblest gait is only a heavy gallop, and their motion is still slower down hill, where they are obliged to sidle along very awkwardly, to keep their lights from rising up into their throat. These beasts always endeavour to avoid a man, except they are wounded, or happen to be engaged in the protection of their cubs. By the force of these instincts and that of self-preservation, they will now and then throw off all reverence for their Maker's image. For that reason, excess of hunger will provoke them to the same desperate attack, for the support of their being. A memorable instance of the last case is said to have happened not long ago in New England, where a bear assaulted a man just by his own door, and rearing himself upon his haunches, offered to take him lovingly into his hug. But the man's wife observing the danger her husband was in, had the courage to run behind the bear, and thrust her two thumbs into his eyes. This made Bruin quit the man, and turn short upon the woman to take his revenge, but she had the presence of mind to spring back with more than female agility, and so both their lives were preserved.

23d. At the distance of sixty-two poles from where we lay, we crossed the south branch of what we took for the Irvin, nor was it without difficulty we got over, though it happened to be without damage. Great part of the way after that was mountainous, so that we were no sooner got down one hill, but we were obliged to climb up another. Only for the last mile of our stage, we encountered a locust thicket that was level, but interlaced terribly with briars and grape vines. We forded a large creek, no less than five times, the banks of which were so steep that we were forced to cut them down with a hoe. We gave it the name of Crooked creek, because of its meanders. The sides of it were planted with shrub-canies, extremely inviting to the horses, which were now quite jaded with clambering up so many precipices, and tugging through so many dismal thickets, notwithstanding which we pushed the line this day four miles sixty-nine poles. The men were so unthrifty this morning as to bring but a small portion of their abundance along with them. This was the more unlucky, because we could discover no sort of game the whole livelong day. Woodsmen are certainly good Christians in one respect, at least, that they always leave the morrow to care for itself; though for that very reason they ought to pray more fervently for their daily bread than most of them remember to do.

The mountains were still concealed from our eyes by a cloud of smoke. As we went along we were alarmed at the sight of a great fire, which showed itself to the northward. This made our small corps march in closer order than we used to do, lest perchance we might be waylaid by Indians. It made us look out sharp to see if we could discover any track or other token of these insidious foresters, but found none. In the mean time we came often upon the track of bears, which cannot without some skill be distinguished from that of human creatures, made with naked feet. And indeed a young woodsman would be puzzled to find out the difference, which consists principally in a bear's paws being something smaller than a man's foot, and in its leaving sometimes the mark of its claws in the impression made upon the ground.

The soil, where the locust thicket grew, was exceedingly rich, as it constantly is, where that kind of tree is naturally and largely produced. But the desolation made there lately, either by fire or caterpillars, had been so general, that we could not see a tree of any bigness standing within our prospect. And the reason why a fire makes such a havoc in these lonely parts is this. The woods are not there burnt every year, as they generally are amongst the inhabitants. But the dead leaves and trash of many years are heaped up together, which being at length kindled by the Indians that happen to pass that way, furnish fuel for a conflagration that carries all before it. There is a beautiful range of hills, as level as a terrace-walk, that overlooks the valley through which Crooked creek conveys its spiral stream. This terrace runs pretty near east and west, about two miles south of the line, and is almost parallel with it. The horses had been too much harassed to permit us to ride at all out of our way, for the pleasure of any prospect, or the gratification of any curiosity. This confined us to the narrow sphere of our business, and is at the same time a just excuse for not animating our story with greater variety.

24th. The surveyors went out the sooner this morning, by reason the men lost very little time in cooking their breakfast. They had made but a spare meal over night, leaving nothing but the hide of a bear for the morrow. Some of the keenest of them got up at midnight to cook that nice morsel after the Indian manner. They first singed the hair clean off, that none of it might stick in their throats; then they boiled the pelt into soup, which had a stratum

of grease swimming upon it full half an inch thick. However, they commended this dish extremely; though I believe the praises they gave it were more owing to their good stomach than to their good taste. The line was extended six miles and three hundred poles, and in that distance crossed Crooked creek at least eight times more. We were forced to scuffle through a thicket about two miles in breadth, planted with locusts and hickory saplings, as close as they could stand together. Amongst these there was hardly a tree of tolerable growth within view. It was a dead plane of several miles extent, and very fertile soil. Beyond that the woods were open for about three miles, but mountainous. All the rest of our day's journey was pestered with bushes and grape vines, in the thickest of which we were obliged to take up our quarters, near one of the branches of Crooked creek. This night it was the men's good fortune to fare very sumptuously. The Indian had killed two large bears, the fattest of which he had taken napping. One of the people too shot a rackoon, which is also of the dog kind, and as big as a small fox, though its legs are shorter, and when fat has a much higher relish than either mutton or kid. It is naturally not carnivorous, but very fond of Indian corn and persimmons. The fat of this animal is reckoned very good to assuage swellings and inflammations. Some old maids are at the trouble of breeding them up tame, for the pleasure of seeing them play over as many humorous tricks as a monkey. It climbs up small trees, like a bear, by embracing the bodies of them. Till this night we had accustomed ourselves to go to bed in our night-gowns, believing we should thereby be better secured from the cold: but upon trial found we lay much warmer by stripping to our shirts, and spreading our gowns over us. A true woodsman, if he have no more than a single blanket, constantly pulls all off, and, lying on one part of it, draws the other over him, believing it much more refreshing to lie so, than in his clothes; and if he find himself not warm enough, shifts his lodging to leeward of the fire, in which situation the smoke will drive over him, and effectually correct the cold dew, that would otherwise descend upon his person, perhaps to his great damage.

25th. The air clearing up this morning, we were again agreeably surprised with a full prospect of the mountains. They discovered themselves both to the north and south of us, on either side, not distant above ten miles, according to our best computation. We could now see those to the north rise in four distinct ledges, one above another, but those to the south formed only a single ledge, and that broken and interrupted in many places; or rather they were only single mountains detached from each other. One of the southern mountains was so vastly high, it seemed to hide its head in the clouds, and the west end of it terminated in a horrible precipice, that we called the Despairing Lover's Leap. The next to it, towards the east, was lower, except at one end, where it heaved itself up in the form of a vast stack of chimneys. The course of the northern mountains seemed to tend west-south-west, and those to the southward very near west. We could descry other mountains ahead of us, exactly in the course of the line, though at a much greater distance. In this point of view, the ledges on the right and left both seemed to close, and form a natural amphitheatre. Thus it was our fortune to be wedged in betwixt these two ranges of mountains, in-somuch that if our line had run ten miles on either side, it had butted before this day either upon one or the other, both of them now stretching away plainly to the eastward of us. It had rained a little in the night, which dispersed the smoke and opened this romantic scene to us all at once, though it was again hid from our eyes as we moved forwards, by the rough woods we had the misfortune to be engaged with. The bushes were so thick for near four miles together, that they tore the deer skins to pieces that guarded the

bread bags. Though, as rough as the woods were, the soil was extremely good all the way, being washed down from the neighbouring hills into the plain country. Notwithstanding all these difficulties, the surveyors drove on the line four miles and two hundred and five poles.

In the mean time we were so unlucky as to meet with no sort of game the whole day, so that the men were obliged to make a frugal distribution of what little they left in the morning. We encamped upon a small rill, where the horses came off as temperately as their masters. They were by this time grown so thin, by hard travel and spare feeding, that henceforth, in pure compassion, we chose to perform the greater part of the journey on foot. And as our baggage was by this time grown much lighter, we divided it, after the best manner, so that every horse's load might be proportioned to the strength he had left. Though, after all the prudent measures we could take, we perceived the hills began to rise upon us so fast in our front, that it would be impossible for us to proceed much farther.

We saw very few squirrels in the upper parts, because the wild cats devour them unmercifully. Of these there are four kinds: the fox squirrel, the gray, the flying, and the ground squirrel. These last resemble a rat in every thing but the tail, and the black and russet streaks that run down the length of their little bodies.

26th. We found our way grow still more mountainous, after extending the line three hundred poles farther. We came then to a rivulet that ran with a swift current towards the south. This we fancied to be another branch of the Irvin, though some of the men, who had been Indian traders, judged it rather to be the head of Deep river, that discharges its stream into that of Pee Dee; but this seemed a wild conjecture. The hills beyond that river were exceedingly lofty, and not to be attempted by our jaded palfreys, which could now hardly drag their legs after them upon level ground. Besides, the bread began to grow scanty, and the winter season to advance apace upon us. We had likewise reason to apprehend the consequences of being intercepted by deep snows, and the swelling of the many waters between us and home. The first of these misfortunes would starve all our horses, and the other ourselves, by cutting off our retreat, and obliging us to winter in those desolate woods. These considerations determined us to stop short here, and push our adventures no farther. The last tree we marked was a red oak, growing on the bank of the river; and to make the place more remarkable, we blazed all the trees around it.

We found the whole distance, from Coratuck inlet to the rivulet where we left off, to be, in a straight line, two hundred and forty-one miles and two hundred and thirty poles. And from the place where the Carolina commissioners deserted us, seventy-two miles and three hundred and two poles. This last part of the journey was generally very hilly, or else grown up with troublesome thickets and underwoods, all which our Carolina friends had the discretion to avoid. We encamped in a dirty valley near the rivulet above-mentioned, for the advantage of the canes, and so sacrificed our own convenience to that of our horses. There was a small mountain half a mile to the northward of us, which we had the curiosity to climb up in the afternoon, in order to enlarge our prospect. From thence we were able to discover where the two ledges of mountains closed, as near as we could guess, about thirty miles to the west of us, and lamented that our present circumstances would not permit us to advance the line to that place, which the hand of Nature had made so very remarkable.

Not far from our quarters one of the men picked up a pair of elk's horns, not very large, and discovered the track of the elk that had shed them. It was rare to find any tokens of those animals so far to the south, because

they keep commonly to the northward of thirty-seven degrees, as the buffaloes, for the most part, confine themselves to the southward of that latitude. The elk is full as big as a horse, and of the deer kind. The stags only have horns, and those exceedingly large and spreading. Their colour is something lighter than that of the red deer, and their flesh tougher. Their swiftest speed is a large trot, and in that motion they turn their horns back upon their necks, and cock their noses aloft in the air. Nature has taught them this attitude to save their antlers from being entangled in the thickets, which they always retire to. They are very shy, and have the sense of smelling so exquisite that they wind a man at a great distance. For this reason they are seldom seen but when the air is moist, in which case their smell is not so nice. They commonly herd together, and the Indians say, if one of the drove happen by some wound to be disabled from making his escape, the rest will forsake their fears to defend their friend, which they will do with great obstinacy, till they are killed upon the spot. Though, otherwise, they are so alarmed at the sight of a man, that to avoid him they will sometimes throw themselves down very high precipices into the river.

A misadventure happened here, which gave us no small perplexity. One of the commissioners was so unlucky as to bruise his foot against a stump, which brought on a formal fit of the gout. It must be owned there could not be a more unseasonable time, nor a more improper situation, for any one to be attacked by that cruel distemper. The joint was so inflamed that he could neither draw shoe nor boot upon it; and to ride without either would have exposed him to so many rude knocks and bruises, in those rough woods, as to be intolerable even to a stoic. It was happy, indeed, that we were to rest here the next day, being Sunday, that there might be leisure for trying some speedy remedy. Accordingly he was persuaded to bathe his foot in cold water, in order to repel the humour and assuage the inflammation. This made it less painful, and gave us hopes, too, of reducing the swelling in a short time.

Our men had the fortune to kill a brace of bears, a fat buck, and a wild turkey, all which paid them with interest for yesterday's abstinence. This constant and seasonable supply of our daily wants made us reflect thankfully on the bounty of Providence. And that we might not be unmindful of being all along fed by Heaven in this great and solitary wilderness, we agreed to wear in our hats the maosti, which is, in Indian, the beard of a wild turkey-cock, and on our breasts the figure of that fowl with its wings extended, and holding in its claws a scroll, with this motto, "*Vice coturnicum*," meaning that we had been supported by them in the wilderness in the room of quails.

27th. This being Sunday we were not wanting in our thanks to Heaven for the constant support and protection we had been favoured with. Nor did our chaplain fail to put us in mind of our duty by a sermon proper for the occasion. We ordered a strict inquiry to be made into the quantity of bread we had left, and found no more than would subsist us a fortnight at short allowance. We made a fair distribution of our whole stock, and at the same time recommended to the men to manage this, their last stake, to the best advantage, not knowing how long they would be obliged to live upon it. We likewise directed them to keep a watchful eye upon their horses, that none of them might be missing the next morning, to hinder our return. There fell some rain before noon, which made our camp more a bog than it was before. This moist situation began to infect some of the men with fevers, and some with fluxes, which however we soon removed with Peruvian bark and ipococanah. In the afternoon we marched up again to the top of the hill to entertain our eyes a second time with the view of the mountains, but a perverse fog arose that hid them from our sight. In the evening we

deliberated which way it might be most proper to return. We had at first intended to cross over at the foot of the mountains to the head of James river, that we might be able to describe that natural boundary so far. But, on second thoughts, we found many good reasons against that laudable design, such as the weakness of our horses, the scantiness of our bread, and the near approach of winter. We had cause to believe the way might be full of hills, and the farther we went towards the north, the more danger there would be of snow. Such considerations as these determined us at last to make the best of our way back upon the line, which was the straightest, and consequently the shortest way to the inhabitants. We knew the worst of our course, and were sure of a beaten path all the way, while we were totally ignorant what difficulties and dangers the other course might be attended with. So prudence got the better for once of curiosity, and the itch for new discoveries gave place to self-preservation. Our inclination was the stronger to cross over according to the course of the mountains, that we might find out whether James river and Appomattox river head there, or run quite through them. It is certain that Potomac passes in a large stream through the main ledge, and then divides itself into two considerable rivers. That which stretches away to the northward is called Cohungaroota,\* and that which flows to the south-west, hath the name of Sharantow. The course of this last stream is near parallel to the Blue Ridge of mountains, at the distance only of about three or four miles. Though how far it may continue that course has not yet been sufficiently discovered, but some woodsmen pretend to say it runs as far as the source of Roanoke; nay, they are so very particular as to tell us that Roanoke, Sharantow, and another wide branch of Mississippi, all head in one and the same mountain. What dependence there may be upon this conjectural geography, I will not pretend to say, though it is certain that Sharantow keeps close to the mountains, as far as we are acquainted with its tendency. We are likewise assured that the south branch of James river, within less than twenty miles east of the main ledge, makes an elbow, and runs due south-west, which is parallel with the mountains on this side. But how far it stretches that way, before it returns, is not yet certainly known, no more than where it takes its rise.

In the mean time it is strange that our woodsmen have not had curiosity enough to inform themselves more exactly of these particulars, and it is stranger still that the government has never thought it worth the expense of making an accurate survey of the mountains, that we might be masters of that natural fortification before the French, who in some places have settlements not very distant from it. It therefore concerns his majesty's service very nearly, and the safety of his subjects in this part of the world, to take possession of so important a barrier in time, lest our good friends, the French, and the Indians, through their means, prove a perpetual annoyance to these colonies. Another reason to invite us to secure this great ledge of mountains is, the probability that very valuable mines may be discovered there. Nor would it be at all extravagant to hope for silver mines, among the rest, because part of these mountains lie exactly in the same parallel, as well as upon the same continent with New Mexico, and the mines of St. Barb.

28th. We had given orders for the horses to be brought up early, but the likelihood of more rain prevented our being over-hasty in decamping. Nor were we out in our conjectures, for about ten o'clock it began to fall very plentifully. Our commissioner's pain began now to abate, as the swelling increased. He made an excellent figure for a mountaineer, with one boot of

\* Which by a late survey has been found to extend above two hundred miles before it reaches its source, in a mountain, from whence Allegany, one of the branches of Mississippi, takes its rise, and runs south-west, as this river does south-east.



leather and the other of flannel. Thus accoutred, he intended to mount, if the rain had not happened opportunely to prevent him. Though, in truth, it was hardly possible for him to ride with so slender a defence, without exposing his foot to be bruised and tormented by the saplings, that stood thick on either side of the path. It was therefore a most seasonable rain for him, as it gave more time for his distemper to abate. Though it may be very difficult to find a certain cure for the gout, yet it is not improbable but some things may ease the pain, and shorten the fits of it. And those medicines are most likely to do this, that supple the parts, and clear the passage through the narrow vessels, that are the seat of this cruel disease. Nothing will do this more suddenly than rattle-snake's oil, which will even penetrate the pores of glass when warmed in the sun. It was unfortunate, therefore, that we had not taken out the fat of those snakes we had killed some time before, for the benefit of so useful an experiment, as well as for the relief of our fellow-traveller. But lately the Seneca rattle-snake root has been discovered in this country, which being infused in wine, and drunk morning and evening, has in several instances had a very happy effect upon the gout, and enabled cripples to throw away their crutches and walk several miles, and, what is stranger still, it takes away the pain in half an hour. Nor was the gout the only disease amongst us that was hard to cure. We had a man in our company who had too voracious a stomach for a woodsman. He ate as much as any other two, but all he swallowed stuck by him till it was carried off by a strong purge. Without this assistance, often repeated, his belly and bowels would swell to so enormous a bulk that he could hardly breathe, especially when he lay down, just as if he had had an asthma; though, notwithstanding this oddness of constitution, he was a very strong, lively fellow, and used abundance of violent exercise, by which it was wonderful the peristaltic motion was not more vigorously promoted. We gave this poor man several purges, which only eased him for the present, and the next day he would grow as burly as ever. At last we gave him a moderate dose of ipococanah, in broth made very salt, which turned all its operation downwards. This had so happy an effect that, from that day forward to the end of our journey, all his complaints ceased, and the passages continued unobstructed.

The rain continued most of the day and some part of the night, which incommoded us much in our dirty camp, and made the men think of nothing but eating, even at the time when nobody could stir out to make provision for it.

29th. Though we were flattered in the morning with the usual tokens of a fair day, yet they all blew over, and it rained hard before we could make ready for our departure. This was still in favour of our podagrous friend, whose lameness was now grown better, and the inflammation fallen. Nor did it seem to need above one day more to reduce it to its natural proportion, and make it fit for the boot; and effectually the rain procured this benefit for him, and gave him particular reason to believe his stars propitious. Notwithstanding the falling weather, our hunters sallied out in the afternoon, and drove the woods in a ring, which was thus performed. From the circumference of a large circle they all marched inwards and drove the game towards the centre. By this means they shot a brace of fat bears, which came very seasonably, because we had made clean work in the morning and were in danger of dining with St. Anthony, or his grace Duke Humphry. But in this expedition the unhappy man who had lost himself once before, straggled again so far in pursuit of a deer, that he was hurried a second time quite out of his knowledge; and night coming on before he could recover the camp, he was obliged to lie down, without any of the comforts of fire, food or covering; nor would his fears suffer him to sleep very sound, because, to his great dis-

turbance, the wolves howled all that night, and the panthers screamed most frightfully. In the evening a brisk north-wester swept all the clouds from the sky, and exposed the mountains as well as the stars to our prospect. That which was the most lofty to the southward, and which we called the Lover's Leap, some of our Indian traders fondly fancied was the Kiawan mountain, which they had formerly seen from the country of the Cherokees. They were the more positive by reason of the prodigious precipice that remarkably distinguished the west end of it. We seemed however not to be far enough south for that, though it is not improbable but a few miles farther the course of our line might carry us to the most northerly towns of the Cherokees. What makes this the more credible, is the north-west course, that our traders take from the Catawbias for some hundred miles together, when they carry goods that round-about way to the Cherokees. It was a great pity that the want of bread, and the weakness of our horses, hindered us from making the discovery. Though the great service such an excursion might have been to the country would certainly have made the attempt not only pardonable, but much to be commended. Our traders are now at the vast charge and fatigue of travelling above five hundred miles for the benefit of that traffic which hardly quits cost. Would it not then be worth the assembly's while to be at some charge to find a shorter cut to carry on so profitable a trade, with more advantage, and less hazard and trouble, than they do at present? For I am persuaded it will not then be half the distance that our traders make it now, nor half so far as Georgia lies from the northern clans of that nation. Such a discovery would certainly prove an unspeakable advantage to this colony, by facilitating a trade with so considerable a nation of Indians, which have sixty-two towns, and more than four thousand fighting men. Our traders at that rate would be able to undersell those sent from the other colonies so much, that the Indians must have reason to deal with them preferable to all others. Of late the new colony of Georgia has made an act obliging us to go four hundred miles to take out a license to traffic with these Cherokees, though many of their towns lie out of their bounds, and we had carried on this trade eighty years before that colony was thought of.

30th. In the morning early the man who had gone astray the day before found his way to the camp, by the sound of the bells that were upon the horses' necks. At nine o'clock we began our march back towards the rising sun; for though we had finished the line, yet we had not yet near finished our fatigue. We had after all two hundred good miles at least to our several habitations, and the horses were brought so low, that we were obliged to travel on foot great part of the way, and that in our boots, too, to save our legs from being torn to pieces by the bushes and briers. Had we not done this, we must have left all our horses behind, which could now hardly drag their legs after them, and with all the favour we could show the poor animals, we were forced to set seven of them free, not far from the foot of the mountains. Four men were despatched early to clear the road, that our lame commissioner's leg might be in less danger of being bruised, and that the baggage horses might travel with less difficulty and more expedition. As we passed along, by favour of a serene sky, we had still, from every eminence, a perfect view of the mountains, as well to the north as to the south. We could not forbear now and then facing about to survey them, as if unwilling to part with a prospect, which at the same time, like some rake's, was very wild and very agreeable. We encouraged the horses to exert the little strength they had, and being light, they made a shift to jog on about eleven miles. We encamped on Crooked creek, near a thicket of canes. In the front of our camp rose a very beautiful hill, that bounded our view at about a

mile's distance, and all the intermediate space was covered with green canes. Though, to our sorrow, fire-wood was scarce, which was now the harder upon us, because a north-wester blew very cold from the mountains.

The Indian killed a stately, fat buck, and we picked his bones as clean as a score of turkey-buzzards could have done. By the advantage of a clear night, we made trial once more of the variation, and found it much the same as formerly. This being his majesty's birthday, we drank all the loyal healths in excellent water, not for the sake of the drink, (like many of our fellow subjects,) but purely for the sake of the toast. And because all public mirth should be a little noisy, we fired several volleys of canes, instead of guns, which gave a loud report. We threw them into the fire, where the air enclosed betwixt the joints of the canes, being expanded by the violent heat, burst its narrow bounds with a considerable explosion!

In the evening one of the men knocked down an opossum, which is a harmless little beast, that will seldom go out of your way, and if you take hold of it, will only grin, and hardly ever bite. The flesh was well tasted and tender, approaching nearest to pig, which it also resembles in bigness. The colour of its fur was a goose gray, with a swine's snout, and a tail like a rat's, but at least a foot long. By twisting this tail about the arm of a tree, it will hang with all its weight, and swing to any thing it wants to take hold of. It has five claws on the fore feet of equal length, but the hinder feet have only four claws, and a sort of thumb standing off at a proper distance. Their feet being thus formed, qualify them for climbing up trees to catch little birds, which they are very fond of. But the greatest particularity of this creature, and which distinguishes it from most others that we are acquainted with, is the false belly of the female, into which her young retreat in time of danger. She can draw the slit, which is the inlet into this pouch, so close, that you must look narrowly to find it, especially if she happen to be a virgin. Within the false belly may be seen seven or eight teats, on which the young ones grow from their first formation till they are big enough to fall off, like ripe fruit from a tree. This is so odd a method of generation, that I should not have believed it without the testimony of mine own eyes. Besides a knowing and credible person has assured me he has more than once observed the embryo opossums growing to the teat before they were completely shaped, and afterwards watched their daily growth till they were big enough for birth. And all this he could the more easily pry into, because the dam was so perfectly gentle and harmless, that he could handle her just as he pleased. I could hardly persuade myself to publish a thing so contrary to the course that nature takes in the production of other animals, unless it were a matter commonly believed in all countries where that creature is produced, and has been often observed by persons of undoubted credit and understanding. They say that the leather-winged bats produce their young in the same uncommon manner. And that young sharks at sea, and young vipers ashore, run down the throats of their dams when they are closely pursued.

The frequent crossing of Crooked creek, and mounting the steep banks of it, gave the finishing stroke to the foundering our horses: and no less than two of them made a full stop here, and would not advance a foot farther, either by fair means or foul. We had a dreamer of dreams amongst us, who warned me in the morning to take care of myself, or I should infallibly fall into the creek; I thanked him kindly, and used what caution I could, but was not able it seems to avoid my destiny, for my horse made a false step and laid me down at my full length in the water. This was enough to bring dreaming into credit, and I think it much for the honour of our expedition, that it was graced not only with a priest but also with a prophet. We were so perplexed with this serpentine creek, as well as in passing the branches of

the Irvin, (which were swelled since we saw them before,) that we could reach but five miles this whole day. In the evening we pitched our tent near Miry creek, (though an uncomfortable place to lodge in) purely for the advantage of the canes. Our hunters killed a large doe and two bears, which made all other misfortunes easy. Certainly no Tartar ever loved horse-flesh, nor Hottentot guts and garbage, better than woodsmen do bear. The truth of it is, it may be proper food perhaps for such as work or ride it off, but, with our chaplain's leave, who loved it much, I think it not a very proper diet for saints, who do not mortify the flesh by toil. And now, for the good of mankind, and for the better peopling an infant colony, which has no want but that of inhabitants, I will venture to publish a secret of importance, which our Indian disclosed to me. I asked him the reason why few or none of his countrywomen were barren? To which curious question he answered, with a broad grin upon his face, they had an infallible secret for that. Upon my being importunate to know what the secret might be, he informed me that, if any Indian woman did not prove with child at a decent time after marriage, the husband, to save his reputation with the women, forthwith entered into a bear-diet for six weeks, which in that time produces such healthy effect, that it is great odds but his wife becomes a mother in nine months. And thus much I am able to say, besides, for the reputation of the bear diet, that all the married men of our company were joyful fathers within forty weeks after they got home, and most of the single men had children sworn to them within the same time, our chaplain always excepted, who, with much ado, made a shift to cast out that importunate kind of devil, by dint of fasting and prayer.

November 1st. By the negligence of one of the men in not hobbling his horse, he straggled so far that he could not be found. This stopped us all the morning long; yet, because our time should not be entirely lost, we endeavoured to observe the latitude at twelve o'clock. Though our observation was not perfect, by reason the wind blew a little too fresh, however, by such a one as we could make, we found ourselves in thirty-six degrees twenty minutes only. Notwithstanding our being thus delayed, and the unevenness of the ground, over which we were obliged to walk, (for most of us served now in the infantry,) we travelled no less than six miles, though as merciful as we were to our poor beasts, another of them tired by the way, and was left behind for the wolves and panthers to feast upon.

As we marched along, we had the fortune to kill a brace of bucks, as many bears, and one wild turkey. But this was carrying our sport to wantonness, because we butchered more than we were able to transport. We ordered the deer to be quartered and divided among the horses for the lighter carriage, and recommended the bears to our daily attendants, the turkey-buzzards. We always chose to carry venison along with us rather than bear, not only because it was less cumbersome, but likewise because the people could eat it without bread, which was now almost spent. Whereas the other, being richer food, lay too heavy upon the stomach, unless it were lightened by something farinaceous. This is what I thought proper to remark, for the service of all those whose business or diversion shall oblige them to live any time in the woods. And because I am persuaded that very useful matters may be found out by searching this great wilderness, especially the upper parts of it, about the mountains, I conceive it will help to engage able men in that good work, if I recommend a wholesome kind of food, of very small weight and very great nourishment, that will secure them from starving, in case they should be so unlucky as to meet with no game. The chief discouragement at present from penetrating far into the woods is the trouble of carrying a load of provisions. I must own famine is a frightful monster, and

for that reason to be guarded against as well as we can. But the common precautions against it, are so burthensome, that people cannot tarry long out, and go far enough from home, to make any effectual discovery. The portable provisions I would furnish our foresters withal are glue-broth and rockahominy: one contains the essence of bread, the other of meat. The best way of making the glue-broth is after the following method: Take a leg of beef, veal, venison, or any other young meat, because old meat will not so easily jelly. Pare off all the fat, in which there is no nutriment, and of the lean make a very strong broth, after the usual manner, by boiling the meat to rags till all the goodness be out. After skimming off what fat remains, pour the broth into a wide stew-pan, well tinned, and let it simmer over a gentle even fire, till it come to a thick jelly. Then take it off and set it over boiling water, which is an even heat, and not so apt to burn the broth to the vessel. Over that let it evaporate, stirring it very often till it be reduced, when cold, into a solid substance like glue. Then cut it into small pieces, laying them single in the cold, that they may dry the sooner. When the pieces are perfectly dry, put them into a canister, and they will be good, if kept dry, a whole East India voyage. This glue is so strong, that two or three drachms, dissolved in boiling water with a little salt, will make half a pint of good broth, and if you should be faint with fasting or fatigue, let a small piece of this glue melt in your mouth, and you will find yourself surprisingly refreshed. One pound of this cookery would keep a man in good heart above a month, and is not only nourishing, but likewise very wholesome. Particularly it is good against fluxes, which woodsmen are very liable to, by lying too near the moist ground, and guzzling too much cold water. But as it will be only used now and then, in times of scarcity, when game is wanting, two pounds of it will be enough for a journey of six months. But this broth will be still more heartening, if you thicken every mess with half a spoonful of rockahominy, which is nothing but Indian corn parched without burning, and reduced to powder. The fire drives out all the watery parts of the corn, leaving the strength of it behind, and this being very dry, becomes much lighter for carriage and less liable to be spoiled by the moist air. Thus half a dozen pounds of this sprightly bread will sustain a man for as many months, provided he husband it well, and always spare it when he meets with venison, which, as I said before, may be very safely eaten without any bread at all. By what I have said, a man need not encumber himself with more than eight or ten pounds of provisions, though he continue half a year in the woods. These and his gun will support him very well during that time, without the least danger of keeping one single fast. And though some of his days may be what the French call *jours maigres*, yet there will happen no more of those than will be necessary for his health, and to carry off the excesses of the days of plenty, when our travellers will be apt to indulge their lawless appetites too much.

2d. The heavens frowned this morning, and threatened abundance of rain, but our zeal for returning made us defy the weather, and decamp a little before noon. Yet we had not advanced two miles, before a soaking shower made us glad to pitch our tent as fast as we could. We chose for that purpose a rising ground, half a mile to the east of Matrimony creek. This was the first and only time we were caught in the rain, during the whole expedition. It used before to be so civil as to fall in the night, after we were safe in our quarters, and had trenched ourselves in; or else it came upon us on Sundays, when it was no interruption to our progress, nor any inconvenience to our persons. We had, however, been so lucky in this particular before, that we had abundant reason to take our present soaking patiently, and the misfortune was the less, because we had taken precaution to keep all our

baggage and bedding perfectly dry. This rain was enlivened with very loud thunder, which was echoed back by the hills in the neighbourhood in a frightful manner. There is something in the woods that makes the sound of this meteor more awful, and the violence of the lightning more visible. The trees are frequently shivered quite down to the root, and sometimes perfectly twisted. But of all the effects of lightning that ever I heard of, the most amazing happened in this country, in the year 1736. In the summer of that year a surgeon of a ship, whose name was Davis, came ashore at York to visit a patient. He was no sooner got into the house, but it began to rain with many terrible claps of thunder. When it was almost dark there came a dreadful flash of lightning, which struck the surgeon dead as he was walking about the room, but hurt no other person, though several were near him. At the same time it made a large hole in the trunk of a pine tree, which grew about ten feet from the window. But what was most surprising in this disaster was, that on the breast of the unfortunate man that was killed was the figure of a pine tree, as exactly delineated as any limner in the world could draw it, nay, the resemblance went so far as to represent the colour of the pine, as well as the figure. The lightning must probably have passed through the tree first before it struck the man, and by that means have printed the icon of it on his breast. But whatever may have been the cause, the effect was certain, and can be attested by a cloud of witnesses who had the curiosity to go and see this wonderful phenomenon. The worst of it was, we were forced to encamp in a barren place, where there was hardly a blade of grass to be seen, even the wild rosemary failed us here, which gave us but too just apprehensions that we should not only be obliged to trudge all the way home on foot, but also to lug our baggage at our backs into the bargain. Thus we learned by our own experience, that horses are very improper animals to use in a long ramble into the woods, and the better they have been used to be fed, they are still the worse. Such will fall away a great deal faster, and fail much sooner, than those which are wont to be at their own keeping. Besides, horses that have been accustomed to a plain and champaign country will founder presently, when they come to clamber up hills, and batter their hoofs against continual rocks. We need Welsh runts, and Highland Galloways to climb our mountains withal; they are used to precipices, and will bite as close as Banstead Down sheep. But I should much rather recommend mules, if we had them, for these long and painful expeditions; though, till they can be bred, certainly asses are the fittest beasts of burthen for the mountains. They are sure-footed, patient under the heaviest fatigue, and will subsist upon moss, or browsing on shrubs all the winter. One of them will carry the necessary luggage of four men, without any difficulty, and upon a pinch will take a quarter of bear or venison upon their backs into the bargain. Thus, when the men are light and disengaged from every thing but their guns, they may go the whole journey on foot with pleasure. And though my dear countrymen have so great a passion for riding, that they will often walk two miles to catch a horse, in order to ride one, yet, if they will please to take my word for it, when they go into the woods upon discovery, I would advise them by all means to march a-foot, for they will then be delivered from the great care and concern for their horses, which takes up too large a portion of their time. Over night we are now at the trouble of hobbling them out, and often of leading them a mile or two to a convenient place for forage, and then in the morning we are some hours in finding them again, because they are apt to stray a great way from the place where they were turned out. Now and then, too, they are lost for a whole day together, and are frequently so weak and jaded, that the company must lie still several days, near some meadow, or highland pond, to

recruit them. All these delays retard their progress intolerably; whereas, if they had only a few asses, they would abide close to the camp, and find sufficient food every where, and in all seasons of the year. Men would then be able to travel safely over hills and dales, nor would the steepest mountains obstruct their progress. They might also search more narrowly for mines and other productions of nature, without being confined to level grounds, in compliment to the jades they ride on. And one may foretell, without the spirit of divination, that so long as woodsmen continue to range on horse-back, we shall be strangers to our own country, and few or no valuable discoveries will ever be made. The French *couriers de bois*, who have run from one end of the continent to the other, have performed it, all on foot, or else in all probability must have continued full as ignorant as we are. Our country has now been inhabited more than one hundred and thirty years by the English, and still we hardly know any thing of the Appalachian mountains, that are no where above two hundred and fifty miles from the sea. Whereas the French, who are later comers, have ranged from Quebec southward as far as the mouth of Mississippi, in the bay of Mexico, and to the west almost as far as California, which is either way above two thousand miles.

3d. A north-west wind having cleared the sky, we were now tempted to travel on a Sunday, for the first time, for want of more plentiful forage, though some of the more scrupulous amongst us were unwilling to do evil, that good might come of it, and make our cattle work a good part of the day in order to fill their bellies at night. However, the chaplain put on his casuistical face, and offered to take the sin upon himself. We therefore consented to move a Sabbath day's journey of three or four miles, it appearing to be a matter of some necessity. On the way our unmerciful Indian killed no less than two brace of deer and a large bear. We only primed the deer, being unwilling to be encumbered with their whole carcasses. The rest we consigned to the wolves, which in return serenaded us great part of the night. They are very clamorous in their banquets, which we know is the way some other brutes have, in the extravagance of their jollity and sprightliness, of expressing their thanks to Providence.

We came to our old camp, in sight of the river Irvin, whose stream was swelled now near four feet with the rain that fell the day before. This made it impracticable for us to ford it, nor could we guess when the water would fall enough to let us go over. This put our mathematical professor, who should have set a better example, into the vapours, fearing he should be obliged to take up his winter quarters in that doleful wilderness. But the rest were not infected with his want of faith, but preserved a firmness of mind superior to such little adverse accidents. They trusted that the same good Providence which had most remarkably prospered them hitherto, would continue his goodness and conduct them safe to the end of their journey. However, we found plainly that travelling on the Sunday, contrary to our constant rule, had not thriven with us in the least. We were not gainers of any distance by it, because the river made us pay two days for violating one. Nevertheless, by making this reflection, I would not be thought so rigid an observer of the sabbath as to allow of no work at all to be done, or journeys to be taken upon it. I should not care to lie still and be knocked on the head, as the Jews were heretofore by Antiochus, because I believed it unlawful to stand upon my defence on this good day. Nor would I care, like a certain New England magistrate, to order a man to the whipping post, for daring to ride for a midwife on the Lord's day. On the contrary, I am for doing all acts of necessity, charity, and self-preservation, upon a Sunday as well as other days of the week. But, as I think our present march could not strictly be justified by any of these rules, it was but just we should suffer a little for it. I never

could learn that the Indians set apart any day of the week or the year for the service of God. They pray, as philosophers eat, only when they have a stomach, without having any set time for it. Indeed these idle people have very little occasion for a sabbath to refresh themselves after hard labour, because very few of them ever labour at all. Like the wild Irish, they would rather want than work, and are all men of pleasure, to whom every day is a day of rest. Indeed, in their hunting, they will take a little pains; but this being only a diversion, their spirits are rather raised than depressed by it, and therefore need at most but a night's sleep to recruit them.

4th. By some stakes we had driven into the river yesterday, we perceived the water began to fall, but fell so slowly that we found we must have patience a day or two longer. And because we were unwilling to lie altogether idle, we sent back some of the men to bring up the two horses that tired the Saturday before. They were found near the place where we had left them, but seemed too sensible of their liberty to come to us. They were found standing indeed, but as motionless as the equestrian statue at Charing-Cross. We had great reason to apprehend more rain by the clouds that drove over our heads. The boldest amongst us were not without some pangs of uneasiness at so very sullen a prospect. However, God be praised! it all blew over in a few hours. If much rain had fallen, we resolved to make a raft and bind it together with grape vines, to ferry ourselves and baggage over the river. Though, in that case, we expected the swiftness of the stream would have carried down our raft a long way before we could have tugged it to the opposite shore.

One of the young fellows we had sent to bring up the tired horses entertained us in the evening with a remarkable adventure he had met with that day. He had straggled, it seems, from his company in a mist, and made a cub of a year old betake itself to a tree. While he was new-priming his piece, with intent to fetch it down, the old gentlewoman appeared, and perceiving her heir apparent in distress, advanced open-mouthed to his relief. The man was so intent upon his game, that she had approached very near him before he perceived her. But finding his danger, he faced about upon the enemy, which immediately reared upon her posteriors, and put herself in battle array. The man, admiring at the bear's assurance, endeavoured to fire upon her, but by the dampness of the priming, his gun did not go off. He cocked it a second time, and had the same misfortune. After missing fire twice, he had the folly to punch the beast with the muzzle of his piece; but mother Bruin, being upon her guard, seized the weapon with her paws, and by main strength wrenched it out of the fellow's hands. The man being thus fairly disarmed, thought himself no longer a match for the enemy, and therefore retreated as fast as his legs could carry him. The brute naturally grew bolder upon the flight of her adversary, and pursued him with all her heavy speed. For some time it was doubtful whether fear made one run faster, or fury the other. But after an even course of about fifty yards, the man had the mishap to stumble over a stump, and fell down at his full length. He now would have sold his life a penny-worth; but the bear, apprehending there might be some trick in the fall, instantly halted, and looked with much attention on her prostrate foe. In the mean while, the man had with great presence of mind resolved to make the bear believe he was dead, by lying breathless on the ground, in hopes that the beast would be too generous to kill him over again. To carry on the farce, he acted the corpse for some time without daring to raise his head, to see how near the monster was to him. But in about two minutes, to his unspeakable comfort, he was raised from the dead by the barking of a dog, belonging to one of his companions, who came seasonably to his rescue, and drove the bear from pursuing the



man to take care of her cub, which she feared might now fall into a second distress.

5th. We judged the waters were assuaged this morning to make the river fordable. Therefore about ten we tried the experiment, and every body got over safe, except one man, whose horse slipped from a rock as he forded over, and threw him into the river. But being able to swim, he was not carried down the stream very far before he recovered the north shore. At the distance of about six miles we passed Cascade creek, and three miles farther we came upon the banks of the Dan, which we crossed with much difficulty, by reason the water was risen much higher than when we forded it before. Here the same unlucky person happened to be ducked a second time, and was a second time saved by swimming. My own horse too plunged in such a manner that his head was more than once under water, but with much ado recovered his feet, though he made so low an obeisance, that the water ran fairly over my saddle.

We continued our march as far as Lowland creek, where we took up our lodging, for the benefit of the canes and winter grass that grew upon the rich grounds thereabouts. On our way thither we had the misfortune to drop another horse, though he carried nothing the whole day but his saddle. We showed the same favour to most of our horses, for fear, if we did not do it, we should in a little time be turned into beasts of burthen ourselves. Custom had now made travelling on foot so familiar, that we were able to walk ten miles with pleasure. This we could do in our boots, notwithstanding our way lay over rough woods and uneven grounds. Our learning to walk in heavy boots was the same advantage to us that learning to dance high dances in wooden shoes is to the French, it made us most exceedingly nimble without them. The Indians, who have no way of travelling but on the hoof, make nothing of going twenty-five miles a day, and carrying their little necessities at their backs, and sometimes a stout pack of skins into the bargain. And very often they laugh at the English, who cannot stir to a next neighbour without a horse, and say that two legs are too much for such lazy people, who cannot visit their next neighbour without six. For their parts, they were utter strangers to all our beasts of burthen or carriage, before the slothful Europeans came amongst them. They had on no part of the American continent, or in any of the islands, either horses or asses, camels, dromedaries or elephants, to ease the legs of the original inhabitants, or to lighten their labour. Indeed, in South America, and particularly in Chili, they have a useful animal called "paco." This creature resembles a sheep pretty much; only in the length of the neck, and figure of the head, it is more like a camel. It is very near as high as the ass, and the Indians there make use of it for carrying moderate burthens. The fleece that grows upon it is very valuable for the fineness, length and glossiness of the wool. It has one remarkable singularity, that the hoofs of its fore-feet have three clefts, and those behind no more than one. The flesh of this animal is something drier than our mutton, but altogether as well tasted. When it is angry, it has no way of resenting its wrongs, but by spitting in the face of those that provoke it: and if the spawl happen to light on the bare skin of any person, it first creates an itching, and afterwards a scab, if no remedy be applied. The way to manage these pacos, and make them tractable, is, to bore a hole in their ears, through which they put a rope, and then guide them just as they please. In Chili, they wear a beautiful kind of stuff, with thread made of this creature's wool, which has a gloss superior to any camlet, and is sold very dear in that country.

6th. The difficulty of finding the horses among the tall canes made it late before we decamped. We traversed very hilly grounds, but to make amends

it was pretty clear of underwood. We avoided crossing the Dan twice by taking a compass round the bend of it. There was no passing by the angle of the river without halting a moment to entertain our eyes again with that charming prospect. When that pleasure was over we proceeded to Sable creek, and encamped a little to the east of it. The river thereabouts had a charming effect, its banks being adorned with green canes, sixteen feet high, which make a spring all the year, as well as plenty of forage all the winter. One of the men wounded an old buck, that was gray with years, and seemed by the reverend marks he bore upon him, to confirm the current opinion of that animal's longevity. The smart of his wounds made him not only turn upon the dogs, but likewise pursue them to some distance with great fury. However he got away at last, though by the blood that issued from his wound he could not run far before he fell, and without doubt made a comfortable repast for the wolves. However the Indian had better fortune, and supplied us with a fat doe, and a young bear two years old. At that age they are in their prime, and, if they be fat withal, they are a morsel for a cardinal.

All the land we travelled over this day, and the day before, that is to say from the river Irvin to Sable creek, is exceedingly rich, both on the Virginia side of the line, and that of Carolina. Besides whole forests of canes, that adorn the banks of the river and creeks thereabouts, the fertility of the soil throws out such a quantity of winter grass, that horses and cattle might keep themselves in heart all the cold season without the help of any fodder. Nor have the low grounds only this advantage, but likewise the higher land, and particularly that which we call the Highland Pond, which is two miles broad, and of a length unknown.

I question not but there are thirty thousand acres at least, lying altogether, as fertile as the lands were said to be about Babylon, which yielded, if Herodotus tells us right, an increase of no less than two or three hundred for one. But this hath the advantage of being a higher, and consequently a much healthier, situation than that. So that a colony of one thousand families might, with the help of moderate industry, pass their time very happily there. Besides grazing and tillage, which would abundantly compensate their labour, they might plant vineyards upon the hills, in which situation the richest wines are always produced. They might also propagate white mulberry trees, which thrive exceedingly in this climate, in order to the feeding of silk-worms, and making of raw silk. They might too produce hemp, flax and cotton, in what quantity they pleased, not only for their own use, but likewise for sale. Then they might raise very plentiful orchards, of both peaches and apples, which contribute as much as any fruit to the luxury of life. There is no soil or climate will yield better rice than this, which is a grain of prodigious increase, and of very wholesome nourishment. In short every thing will grow plentifully here to supply either the wants or wantonness of man. Nor can I so much as wish that the more tender vegetables might grow here, such as orange, lemon, and olive trees, because then we should lose the much greater benefit of the brisk north-west winds, which purge the air, and sweep away all the malignant fevers, which hover over countries that are always warm. The soil would also want the advantages of frost, and snow, which by their nitrous particles contribute not a little to its fertility. Besides the inhabitants would be deprived of the variety and sweet vicissitude of the season, which is much more delightful than one dull and constant succession of warm weather, diversified only by rain and sunshine. There is also another convenience, that happens to this country by cold weather—it destroys a great number of snakes, and other venomous reptiles, and troublesome insects, or at least lays them to sleep for several months, which otherwise would annoy us the whole year round, and multiply beyond all enduring. Though oranges

and lemons are desirable fruits, and useful enough in many cases, yet, when the want of them is supplied by others more useful, we have no cause to complain. There is no climate that produces every thing, since the deluge wrenched the poles of the world out of their place, nor is it fit it should be so, because it is the mutual supply one country receives from another, which creates a mutual traffic and intercourse amongst men. And in truth, were it not for the correspondence, in order to make up each other's wants, the wars betwixt bordering nations, like those of the Indians and other barbarous people, would be perpetual and irreconcilable. As to olive trees, I know by experience they will never stand the sharpness of our winters, but their place may be supplied by the plant called sessamun, which yields an infinite quantity of large seed, from whence a sweet oil is pressed, that is very wholesome and in use amongst the people of Lesser Asia. Likewise it is used in Egypt, preferably to oil olive, being not so apt to make those that eat it constantly break out into scabs, as they do in many parts of Italy. This would grow very kindly here, and has already been planted with good success in North Carolina, by way of experiment.

7th. After crossing the Dan, we made a march of eight miles, over hills and dales as far as the next ford of that river. And now we were by practice become such very able footmen, that we easily outwalked our horses, and could have marched much farther, had it not been in pity to their weakness. Besides here was plenty of canes, which was reason enough to make us shorten our journey. Our gunners did great execution as they went along, killing no less than two brace of deer, and as many wild turkeys. Though practice will soon make a man of tolerable vigour an able footman, yet, as a help to bear fatigue I used to chew a root of ginseng as I walked along. This kept up my spirits, and made me trip away as nimbly in my half jack-boots as younger men could do in their shoes. This plant is in high esteem in China, where it sells for its weight in silver. Indeed it does not grow there, but in the mountains of Tartary, to which place the emperor of China sends ten thousand men every year on purpose to gather it. But it grows so scattering there, that even so many hands can bring home no great quantity. Indeed it is a vegetable of so many virtues, that Providence has planted it very thin in every country that has the happiness to produce it. Nor indeed is mankind worthy of so great a blessing, since health and long life are commonly abused to ill purposes. This noble plant grows likewise at the cape of Good Hope, where it is called kanna, and is in wonderful esteem among the Hottentots. It grows also on the northern continent of America, near the mountains, but as sparingly as truth and public spirit. It answers exactly both to the figure and virtues of that which grows in Tartary, so that there can be no doubt of its being the same. Its virtues are, that it gives an uncommon warmth and vigour to the blood, and frisks the spirits, beyond any other cordial. It cheers the heart even of a man that has a bad wife, and makes him look down with great composure on the crosses of the world. It promotes insensible perspiration, dissolves all phlegmatic and viscous humours, that are apt to obstruct the narrow channels of the nerves. It helps the memory, and would quicken even Helvetian dulness. It is friendly to the lungs, much more than scolding itself. It comforts the stomach, and strengthens the bowels, preventing all colics and fluxes. In one word, it will make a man live a great while, and very well while he does live. And what is more, it will even make old age amiable, by rendering it lively, cheerful, and good-humoured. However it is of little use in the seats of love, as a great prince once found, who hearing of its invigorating quality, sent as far as China for some of it, though his ladies could not boast of any advantage thereby.

We gave the Indian the skins of all the deer that he shot himself, and the

men the skins of what they killed. And every evening after the fires were made, they stretched them very tight upon sticks, and dried them. This, by a nocturnal fire, appeared at first a very odd spectacle, every thing being dark and gloomy round about. After they are dried in this manner they may be folded up without damage, till they come to be dressed according to art. The Indians dress them with deer's brains, and so do the English here by their example. For expedition's sake they often stretch their skins over smoke in order to dry them, which makes them smell so disagreeably that a rat must have a good stomach to gnaw them in that condition; nay, it is said, while that perfume continues in a pair of leather breeches, the person that wears them will be in no danger of that villanous little insect the French call morpion. And now I am upon the subject of insects, it may not be improper to mention some few remedies against those that are most vexatious in this climate. There are two sorts without doors, that are great nuisances, the ticks, and the horse flies. The ticks are either deer-ticks, or those that annoy the cattle. The first kind are long, and take a very strong gripe, being most in remote woods, above the inhabitants. The other are round, and more gently insinuate themselves into the flesh, being in all places where cattle are frequent. Both these sorts are apt to be troublesome during the warm season, but have such an aversion to pennyroyal, that they will attack no part that is rubbed with the juice of that fragrant vegetable. And a strong decoction of this is likewise the most effectual remedy against seed-ticks, which bury themselves in your legs, when they are so small you can hardly discern them without a microscope.

The horse flies are not only a great grievance to horses, but likewise to those that ride them. These little vixens confine themselves chiefly to the woods, and are most in moist places. Though this insect be no bigger than an ordinary fly, it bites very smartly, darting its little proboscis into the skin the instant it lights upon it. These are offensive only in the hot months, and in the day time, when they are a great nuisance to travellers; insomuch that it is no wonder they were formerly employed for one of the plagues of Egypt. But dittany, which is to be had in the woods all the while those insects remain in vigor, is a sure defence against them. For this purpose, if you stick a bunch of it on the head-stall of your bridle, they will be sure to keep a respectful distance. Thus, in what part of the woods soever any thing mischievous or troublesome is found, kind Providence is sure to provide a remedy. And it is probably one great reason why God was pleased to create these, and many other vexatious animals, that men should exercise their wits and industry, to guard themselves against them. Bears' oil is used by the Indians as a general defence against every species of vermin. Among the rest, they say it keeps both bugs and mosquitoes from assaulting their persons, which would otherwise devour such uncleanly people. Yet bears' grease has no strong smell, as that plant had which the Egyptians formerly used against mosquitoes, resembling our palma Christi, the juice of which smelled so disagreeably, that the remedy was worse than the disease. Against mosquitoes, in Egypt, the richer sort used to build lofty towers, with bed-chambers in the tops of them, that they might rest undisturbed. It is certain that these insects are no high fliers, because their wings are weak and their bodies so light, that if they mount never so little, the wind blows them quite away from their course, and they become an easy prey to the martins, East India bats, and other birds that fly about in continual quest of them.

8th. As we had twice more to cross the Dan over two fords, that lay no more than seven miles from each other, we judged the distance would not be much greater to go round the bend of it. Accordingly we sent the Indian

and two white men that way, who came up with us in the evening, after fetching a compass of about twelve miles. They told us that, about a mile from our last camp, they passed a creek fortified with steep cliffs, which therefore gained the name of Cliff creek. Near three miles beyond that they forded a second creek, on the margin of which grew abundance of tall canes and this was called Hix's creek, from one of the discoverers. Between these two creeks lies a level of exceeding rich land, full of large trees, and covered with black mould, as fruitful, if we believe them, as that which is yearly overflowed by the Nile. We who marched the nearest way upon the line found the ground rising and falling between the two fords of the Dan, which almost broke our own wind, and the hearts of our jaded palfreys. When we had passed the last ford, it was a sensible joy to find ourselves safe over all the waters that might cut off our retreat. And we had the greater reason to be thankful, because so late in the year it was very unusual to find the rivers so fordable. We caught a large terrapin in the river, which is one kind of turtle. The flesh of it is wholesome, and good for consumptive people. It lays a great number of eggs, not larger but rounder than those of pigeons. These are soft, but withal so tough that it is difficult to break them, yet are very sweet and invigorating, so that some wives recommend them earnestly to their husbands. One of the men, by an overstrain, had unhappily got a running of the reins, for which I gave him every morning a little sweet gum dissolved in water, with good success. This gum distils from a large tree, called the sweet-gum tree, very common in Virginia, and is as healing in its virtue as balm of Gilead, or the balsams of Tolu and of Peru. It is likewise a most agreeable perfume, very little inferior to ambergris. And now I have mentioned ambergris, I hope it will not be thought an unprofitable digression, to give a faithful account how it is produced, in order to reconcile the various opinions concerning it. It is now certainly found to be the dung of the spermaceti whale, which is at first very black and unsavoury. But after having been washed for some months in the sea, and blanched in the sun, it comes at length to be of a gray colour, and from a most offensive smell, contracts the finest fragrantcy in the world. Besides the fragrantcy of this animal substance, it is a very rich and innocent cordial, which raises the spirits without stupifying them afterwards, like opium, or intoxicating them like wine. The animal spirits are amazingly refreshed by this cordial, without the danger of any ill consequence, and if husbands were now and then to dissolve a little of it in their broth, their consorts might be the better for it, as well as themselves. In the Bahama islands (where a great quantity is found, by reason the spermaceti whales resort thither continually,) it is used as an antidote against the venomous fish which abound thereabouts, wherewith the people are apt to poison themselves. We are not only obliged to that whale for this rich perfume, but also for the spermaceti itself, which is the fat of that fish's head boiled and purged from all its impurities. What remains is of a balsamic and detersive quality, very friendly to the lungs, and useful in many other cases.

The Indian had killed a fat doe in the compass he took round the elbow of the river, but was content to prime it only, by reason it was too far off to lug the whole carcass upon his back. This, and a brace of wild turkeys which our men had shot, made up all our bill of fare this evening, but could only afford a philosophical meal to so many craving stomachs. The horses were now so lean that any thing would gall those that carried the least burthen; no wonder then if several of them had sore backs, especially now the pads of the saddles and packs were pressed flat with long and constant use. This would have been another misfortune, had we not been provided with an easy remedy for it. One of the commissioners, believing that such accidents might

happen in a far journey, had furnished himself with plasters of strong glue spread pretty thick. We laid on these, after making them running hot, which, sticking fast, never fell off till the sore was perfectly healed. In the mean time it defended the part so well, that the saddle might bear upon it without danger of further injury.

9th. We reckoned ourselves now pretty well out of the latitude of bears, to the great grief of most of the company. There was still mast enough left in the woods to keep the bears from drawing so near to the inhabitants. They like not the neighbourhood of merciless man, till famine compels them to it. They are all black in this part of the world, and so is their dung, but it will make linen white, being tolerably good soap, without any preparation but only drying. These bears are of a moderate size, whereas within the polar circles they are white, and much larger. Those of the southern parts of Muscovy are of a russet colour, but among the Samoeids, as well as in Greenland and Nova-Zembla, they are as white as the snow they converse with, and by some accounts are as large as a moderate ox. The excessive cold of that climate sets their appetites so sharp, that they will attack a man without ceremony, and even climb up a ship's side to come at him. They range about and are very mischievous all the time the sun is above the horizon, which is something more than five months; but after the sun is set for the rest of the year, they retire into holes, or bury themselves under the snow, and sleep away the dark season without any sustenance at all. It is pity our beggars and pick-pockets could not do the same.

Our journey this day was above twelve miles, and more than half the way terribly hampered with bushes. We tired another horse, which we were obliged to leave two miles short of where we encamped, and indeed several others were upon the careen almost every step. Now we wanted one of those celebrated musicians of antiquity, who, they tell us, among many other wonders of their art, could play an air which, by its animating briskness, would make a jaded horse caper and curvet much better than any whip, spur, or even than swearing. Though I fear our poor beasts were so harassed that it would have been beyond the skill of Orpheus himself so much as to make them prick up their ears. For proof of the marvellous power of music among the ancients, some historians say, that one of those skilful masters took upon him to make the great Alexander start up from his seat, and handle his javelin, whether he would or not, by the force of a sprightly tune, which he knew how to play to him. The king ordered the man to bring his instrument, and then fixing himself firmly in his chair, and determining not to stir, he bade him strike up as soon as he pleased. The musician obeyed, and presently roused the hero's spirits with such warlike notes, that he was constrained, in spite of all his resolution, to spring up and fly to his javelin with great martial fury. We can the easier credit these profane stories by what we find recorded in the oracles of truth, where we are told the wonders David performed by sweetly touching his harp. He made nothing of driving the evil spirit out of Saul, though a certain rabbi assures us he could not do so much by his wife, Michal, when she happened to be in her airs. The greatest instance we have of the power of modern music is that which cures those who in Italy are bitten by the little spider called the tarantula. The whole method of which is performed in the following manner. In Apulia it is a common misfortune for people to be bitten by the tarantula, and most about Taranto and Gallipoli. This is a gray spider, not very large, with a narrow streak of white along the back. It is no wonder there are many of these villanous insects, because, by a ridiculous superstition it is accounted great inhumanity to kill them. They believe, it seems, that if the spider come to a violent death, all those who had been bitten by it will certainly have a

return of their frenzy every year as long as they live. But if it die a natural death, the patient will have a chance to recover in two or three years. The bite of the tarantula gives no more pain than the bite of a mosquito, and makes little or no inflammation on the part, especially when the disaster happens in April or May; but, its venom increasing with the heat of the season, has more fatal consequences in July and August. The persons who are so unhappy as to be bitten in those warm months, fall down on the place in a few minutes, and lie senseless for a considerable time, and when they come to themselves feel horrible pains, are very sick at their stomachs, and in a short time break out into foul sores; but those who are bitten in the milder months have much gentler symptoms. They are longer before the distemper shows itself, and then they have a small disorder in their senses, are a little sick, and perhaps have some moderate breakings-out. However, in both cases, the patient keeps upon the bed, not caring to stir, till he is roused by a tune, proper for his particular case. Therefore, as soon as the symptoms discover themselves, a tarantula doctor is sent for, who, after viewing carefully the condition of the person, first tries one tune and then another, until he is so fortunate as to hit the phrenetic turn of the patient. No sooner does this happen but he begins to wag a finger, then a hand, and afterwards a foot, till at last he springs up and dances round the room, with a surprising agility, rolling his eyes and looking wild the whole time. This dancing-fit lasts commonly about twenty-five minutes, by which time he will be all in a lather. Then he sits down, falls a laughing, and returns to his senses. So plentiful a perspiration discharges so much of the venom as will keep off the return of the distemper for a whole year. Then it will visit him again, and must be removed in the same merry manner. But three dancing bouts will do the business, unless, peradventure, the spider, according to the vulgar notion, has been put to a violent death. The tunes played to expel this whimsical disorder, are of the jig kind, and exceed not fifteen in number. The Apulians are frequently dancing off the effects of this poison, and no remedy is more commonly applied to any other distemper elsewhere, than those sprightly tunes are to the bite of the tarantula in that part of Italy. It is remarkable that these spiders have a greater spite to the natives of the place than they have to strangers, and women are oftener bitten than men. Though there may be a reason for the last, because women are more confined to the house, where these spiders keep, and their coats make them liable to attacks unseen, whereas the men can more easily discover, and brush them off their legs. Nevertheless, both sexes are cured the same way, and thereby show the wonderful effects of music.

Considering how far we had walked, and consequently how hungry we were, we found but short commons when we came to our quarters. One brace of turkeys was all the game we could meet with, which almost needed a miracle to enable them to suffice so many voracious appetites. However, they just made a shift to keep famine, and consequently mutiny, out of the camp. At night we lodged upon the banks of Buffalo creek, where none of us could complain of loss of rest, for having eaten too heavy and luxurious a supper.

10th. In a dearth of provisions our chaplain pronounced it lawful to make bold with the sabbath, and send a party out a-hunting. They fired the dry leaves in a ring of five miles' circumference, which, burning inwards, drove all the game to the centre, where they were easily killed. It is really a pitiful sight to see the extreme distress the poor deer are in, when they find themselves surrounded with this circle of fire; they weep and groan like a human creature, yet cannot move the compassion of those hard-hearted people, who are about to murder them. This unmerciful sport is called fire hunting,

and is much practised by the Indians and frontier inhabitants, who sometimes, in the eagerness of their diversion, are punished for their cruelty, and are hurt by one another when they shoot across at the deer which are in the middle. What the Indians do now by a circle of fire, the ancient Persians performed formerly by a circle of men: and the same is practised at this day in Germany upon extraordinary occasions, when any of the princes of the empire have a mind to make a general hunt, as they call it. At such times they order a vast number of people to surround a whole territory. Then marching inwards in close order, they at last force all the wild beasts into a narrow compass, that the prince and his company may have the diversion of slaughtering as many as they please with their own hands. Our hunters massacred two brace of deer after this unfair way, of which they brought us one brace whole, and only the primings of the rest.

So many were absent on this occasion, that we who remained excused the chaplain from the trouble of spending his spirits by preaching to so thin a congregation. One of the men, who had been an old Indian trader, brought me a stem of silk grass, which was about as big as my little finger. But, being so late in the year that the leaf was fallen off, I am not able to describe the plant. The Indians use it in all their little manufactures, twisting a thread of it that is prodigiously strong. Of this they make their baskets and the aprons which their women wear about their middles, for decency's sake. These are long enough to wrap quite round them and reach down to their knees, with a fringe on the under part by way of ornament. They put on this modest covering with so much art, that the most impertinent curiosity cannot in the negligentest of their motions or postures make the least discovery. As this species of silk grass is much stronger than hemp, I make no doubt but sail cloth and cordage might be made of it with considerable improvement.

11th. We had all been so refreshed by our day of rest, that we decamped earlier than ordinary, and passed the several fords of Hico river. The woods were thick great part of this day's journey, so that we were forced to scuffle hard to advance seven miles, being equal in fatigue to double that distance of clear and open grounds. We took up our quarters upon Sugar-tree creek, in the same camp we had lain in when we came up, and happened to be entertained at supper with a rarity we had never had the fortune to meet with before, during the whole expedition. A little wide of this creek, one of the men had the luck to meet with a young buffalo of two years old. It was a bull, which, notwithstanding he was no older, was as big as an ordinary ox. His legs were very thick and very short, and his hoofs exceeding broad. His back rose into a kind of bunch a little above the shoulders, which I believe contributes not a little to that creature's enormous strength. His body is vastly deep from the shoulders to the brisket, sometimes six feet in those that are full grown. The portly figure of this animal is disgraced by a shabby little tail, not above twelve inches long. This he cocks up on end whenever he is in a passion, and, instead of lowing or bellowing, grunts with no better grace than a hog. The hair growing on his head and neck is long and shagged, and so soft that it will spin into thread not unlike mohair, which might be wove into a sort of camlet. Some people have stockings knit of it, that would have served an Israelite during his forty years' march through the wilderness. Its horns are short and strong, of which the Indians make large spoons, which they say will split and fall to pieces whenever poison is put into them. Its colour is a dirty brown, and its hide so thick that it is scarce penetrable. However, it makes very spongy sole leather by the ordinary method of tanning, though this fault might by good contrivance be mended. As thick as this poor beast's hide was, a bullet made shift to enter



it and fetch him down. It was found all alone, though buffaloes seldom are. They usually range about in herds, like other cattle, and, though they differ something in figure, are certainly of the same species. There are two reasons for this opinion: the flesh of both has exactly the same taste, and the mixed breed betwixt both, they say, will generate. All the difference I could perceive between the flesh of buffalo and common beef was, that the flesh of the first was much yellower than that of the other, and the lean something tougher. The men were so delighted with this new diet, that the gridiron and frying-pan had no more rest all night, than a poor husband subject to certain lectures. Buffaloes may be easily tamed when they are taken young. The best way to catch them is to carry a milch mare into the woods, and when you find a cow and calf, to kill the cow, and then having caught the calf, to suckle it upon the mare. After once or twice sucking her, it will follow her home, and become as gentle as another calf. If we could get into a breed of them, they might be made very useful, not only for the dairy, by giving an ocean of milk, but also for drawing vast and cumbersome weights by their prodigious strength. These, with the other advantages I mentioned before, would make this sort of cattle more profitable to the owner, than any other we are acquainted with, though they would need a world of provender.

12th. Before we marched this morning, every man took care to pack up some buffalo steaks in his wallet, besides what he crammed into his belly. When provisions were plenty, we always found it difficult to get out early, being too much embarrassed with a long-winded breakfast. However, by the strength of our beef, we made a shift to walk about twelve miles, crossing Blue-wing and Tewaw-homini creeks. And because this last stream received its appellation from the disaster of a Tuscarora Indian, it will not be straggling much out of the way to say something of that particular nation.

These Indians were heretofore very numerous and powerful, making, within time of memory, at least a thousand fighting men. Their habitation, before the war with Carolina, was on the north branch of Neuse river, commonly called Connecta creek, in a pleasant and fruitful country. But now the few that are left of that nation live on the north side of Moratuck, which is all that part of Roanoke below the great falls, towards Albemarle sound. Formerly there were seven towns of these savages, lying not far from each other, but now their number is greatly reduced. The trade they have had the misfortune to drive with the English has furnished them constantly with rum, which they have used so immoderately, that, what with the distempers, and what with the quarrels it begat amongst them, it has proved a double destruction. But the greatest consumption of these savages happened by the war about twenty-five years ago, on account of some injustice the inhabitants of that province had done them about their lands. It was on that provocation they resented their wrongs a little too severely upon Mr. Lawson, who, under colour of being surveyor general, had encroached too much upon their territories, at which they were so enraged, that they waylaid him, and cut his throat from ear to ear, but at the same time released the baron de Graffenried, whom they had seized for company, because it appeared plainly he had done them no wrong. This blow was followed by some other bloody actions on the part of the Indians, which brought on the war, wherein many of them were cut off, and many were obliged to flee for refuge to the Senecas, so that now there remain so few, that they are in danger of being quite exterminated by the Catawbias, their mortal enemies. These Indians have a very odd tradition amongst them, that many years ago, their nation was grown so dishonest, that no man could keep any of his goods, or so much as his loving wife to himself. That, however, their God, being unwilling to root them out for their crimes, did them the honour to send a messenger from heaven to instruct

them, and set them a perfect example of integrity and kind behavior towards one another. But this holy person, with all his eloquence and sanctity of life, was able to make very little reformation amongst them. Some few old men did listen a little to his wholesome advice, but all the young fellows were quite incorrigible. They not only neglected his precepts, but derided and evil entreated his person. At last, taking upon him to reprove some young rakes of the Conechta clan very sharply for their impiety, they were so provoked at the freedom of his rebukes, that they tied him to a tree, and shot him with arrows through the heart. But their God took instant vengeance on all who had a hand in that monstrous act, by lightning from heaven, and has ever since visited their nation with a continued train of calamities, nor will he ever leave off punishing, and wasting their people, till he shall have blotted every living soul of them out of the world.

Our hunters shot nothing this whole day but a straggling bear, which happened to fall by the hand of the very person who had been lately disarmed and put to flight, for which he declared war against the whole species.

13th. We pursued our journey with all diligence, and forded Ohimpamony creek about noon, and from thence proceeded to Yapatsco, which we could not cross without difficulty. The beavers had dammed up the water much higher than we found it at our going up, so that we were obliged to lay a bridge over a part that was shallower than the rest, to facilitate our passage. Beavers have more of instinct, that half-brother of reason, than any other animal, especially in matters of self-preservation. In their houses they always contrive a sally-port, both towards the land and towards the water, that so they may escape by one, if their retreat should happen to be cut off at the other. They perform all their works in the dead of night, to avoid discovery, and are kept diligently to it by the master beaver, which by his age or strength has gained to himself an authority over the rest. If any of the gang happen to be lazy, or will not exert himself to the utmost in felling of trees, or dragging them to the place where they are made use of, this superintendent will not fail to chastise him with the flat of the tail, wherewith he is able to give unmerciful strokes. They lie snug in their houses all day, unless some unneighbourly miller chance to disturb their repose, by demolishing their dams for supplying his mill with water. It is rare to see one of them, and the Indians for that reason have hardly any way to take them, but by laying snares near the place where they dam up the water. But the English hunters have found out a more effectual method, by using the following receipt. Take the large pride of the beaver, squeeze all the juice out of it, then take the small pride, and squeeze out about five or six drops. Take the inside of sassafras bark, powder it, and mix it with the liquor, and place this bait conveniently for your steel trap. The story of their biting off their testicles to compound for their lives, when they are pursued, is a story taken upon trust by Pliny, like many others. Nor is it the beavers' testicles that carry the perfume, but they have a pair of glands just within the fundament, as sweet as musk, that perfume their dung, and communicate a strong scent to their testicles, by being placed near them. It is true several creatures have strange instincts for their preservation, as the Egyptian frog, we are told by Elian, will carry a whole joint of a reed across its mouth, that it may not be swallowed by the ibis. And this long-necked fowl will give itself a clyster with its beak, whenever it finds itself too costive or feverish. The dogs of that country lap the water of the Nile in a full trot, that they may not be snapped by the crocodiles. Both beavers and wolves, we know, when one of their legs is caught in a steel trap, will bite it off, that they may escape with the rest. The flesh of the beavers is tough and dry, all but the tail, which, like the parrot's tongue, was one of the far-fetched rarities with which Heliogabalus used to furnish

his luxurious table. The fur of these creatures is very valuable, especially in the more northern countries, where it is longer and finer. This the Dutch have lately contrived to mix with their wool, and weave into a sort of drugget, that is not only warm, but wonderfully light and soft. They also make gloves and stockings of it, that keep out the cold almost as well as the fur itself, and do not look quite so savage.

There is a deal of rich low ground on Yapatsco creek, but I believe liable to be overflowed in a fresh. However, it might be proper enough for rice, which receives but little injury from water. We encamped on the banks of Massamony creek, after a journey of more than eleven miles. By the way we shot a fat doe and a wild turkey, which fed us all plentifully. And we have reason to say, by our own happy experience, that no man need to despair of his daily bread in the woods, whose faith is but half so large as his stomach.

14th. Being at length happily arrived within twenty miles of the uppermost inhabitants, we despatched two men who had the ablest horses to go before, and get a beef killed and some bread baked to refresh their fellow travellers, upon their arrival. They had likewise orders to hire an express to carry a letter to the governor, giving an account that we were all returned in safety. This was the more necessary, because we had been so long absent that many now began to fear we were, by this time, scalped and barbecued by the Indians. We decamped with the rest of the people about ten o'clock, and marched near twelve miles. In our way we crossed Nutbush creek, and four miles farther we came upon a beautiful branch of Great creek, where we took up our quarters. The tent was pitched upon an eminence, which overlooked a wide piece of low grounds, covered with reeds and watered by a crystal stream, gliding through the middle of it. On the other side of this delightful valley, which was about half a mile wide, rose a hill that terminated the view, and in the figure of a semicircle closed in upon the opposite side of the valley. This had a most agreeable effect upon the eye, and wanted nothing but cattle grazing in the meadow, and sheep and goats feeding on the hill, to make it a complete rural landscape.

The Indian killed a fawn, which, being upon its growth, was not fat, but made some amends by being tender. He also shot an otter, but our people were now better fed than to eat such coarse food. The truth of it is, the flesh of this creature has a rank fishy taste, and for that reason might be a proper regale for the Samoeids, who drink the czar of Muscovy's health and toast their mistresses in a bumper of train oil. The Carthusians, to save their vow of eating no flesh, pronounce this amphibious animal to be a fish, and feed upon it as such, without wounding their consciences. The skin of the otter is very soft, and the Swedes make caps and socks of it, not only for warmth, but also because they fancy it strengthens the nerves, and is good against all distempers of the brain. The otter is a great devourer of fish, which are its natural food, and whenever it betakes itself to a vegetable diet, it is as some high-spirited wives obey their husbands, by pure necessity. They dive after their prey, though they cannot continue long under water, but thrust their noses up to the surface now and then for breath. They are great enemies to weirs set up in the rivers to catch fish, devouring or biting to pieces all they find there. Nor is it either easy to fright them from this kind of robbery, or to destroy them. The best way I could ever find was to float an old wheel just by the weir, and so soon as the otter has taken a large fish, he will get upon the wheel to eat it more at his ease, which may give you an opportunity of firing upon him from the shore. One of our people shot a large gray squirrel with a very bushy tail, a singular use of which our merry Indian discovered to us. He said whenever this little animal has occasion to

cross a run of water, he launches a chip or piece of bark into the water, on which he embarks, and, holding up his tail to the wind, sails over very safely. If this be true, it is probable men learned at first the use of sails from these ingenious little animals, as the Hottentots learned the physical use of most of their plants from the baboons.

15th. About three miles from our camp we passed Great creek, and then, after traversing very barren grounds for five miles together, we crossed the Trading Path, and soon after had the pleasure of reaching the uppermost inhabitant. This was a plantation belonging to colonel Mumford, where our men almost burst themselves with potatoes and milk. Yet as great a curiosity as a house was to us foresters, still we chose to lie in the tent, as being much the cleaner and sweeter lodging.

The Trading Path above-mentioned receives its name from being the route the traders take with their caravans, when they go to traffic with the Catawbas and other southern Indians. The Catawbas live about two hundred and fifty miles beyond Roanoke river, and yet our traders find their account in transporting goods from Virginia to trade with them at their own town. The common method of carrying on this Indian commerce is as follows: Gentlemen send for goods proper for such a trade from England, and then either venture them out at their own risk to the Indian towns, or else credit some traders with them of substance and reputation, to be paid in skins at a certain price agreed betwixt them. The goods for the Indian trade consist chiefly in guns, powder, shot, hatchets, (which the Indians call tomahawks,) kettles, red and blue planes, Duffields, Stroudwater blankets, and some cutlery wares, brass rings and other trinkets. These wares are made up into packs and carried upon horses, each load being from one hundred and fifty to two hundred pounds, with which they are able to travel about twenty miles a day, if forage happen to be plentiful. Formerly a hundred horses have been employed in one of these Indian caravans, under the conduct of fifteen or sixteen persons only, but now the trade is much impaired, inasmuch that they seldom go with half that number. The course from Roanoke to the Catawbas is laid down nearest south-west, and lies through a fine country, that is watered by several beautiful rivers. Those of the greatest note are, first, Tar river, which is the upper part of Pamptico, Flat river, Little river and Eno river, all three branches of Neuse. Between Eno and Saxapahaw rivers are the Haw old fields, which have the reputation of containing the most fertile high land in this part of the world, lying in a body of about fifty thousand acres. This Saxapahaw is the upper part of Cape Fair river, the falls of which lie many miles below the Trading Path. Some mountains overlook this rich spot of land, from whence all the soil washes down into the plain, and is the cause of its exceeding fertility. Not far from thence the path crosses Aramanchy river, a branch of Saxapahaw, and about forty miles beyond that, Deep river, which is the north branch of Peedee. Then forty miles beyond that, the path intersects the Yadkin, which is there half a mile over, and is supposed to be the south branch of the same Peedee. The soil is exceedingly rich on both sides the Yadkin, abounding in rank grass and prodigiously large trees; and for plenty of fish, fowl and venison, is inferior to no part of the northern continent. There the traders commonly lie still for some days, to recruit their horses' flesh as well as to recover their own spirits. Six miles further is Crane creek, so named from its being the rendezvous of great armies of cranes, which wage a more-cruel war at this day, with the frogs and the fish, than they used to do with the pigmies in the days of Homer. About three-score miles more bring you to the first town of the Catawbas, called Nauvass, situated on the banks of Santee river. Besides this town there are five others belonging to the same nation, lying

all on the same stream, within the distance of twenty miles. These Indians were all called formerly by the general name of the Usherees, and were a very numerous and powerful people. But the frequent slaughters made upon them by the northern Indians, and, what has been still more destructive by far, the intemperance and foul distempers introduced amongst them by the Carolina traders, have now reduced their numbers to little more than four hundred fighting men, besides women and children. It is a charming place where they live, the air very wholesome, the soil fertile, and the winters ever mild and serene.

In Santee river, as in several others of Carolina, a small kind of alligator is frequently seen, which perfumes the water with a musky smell. They seldom exceed eight feet in length in these parts, whereas, near the equinoctial, they come up to twelve or fourteen. And the heat of the climate does not only make them bigger, but more fierce and voracious. They watch the cattle there when they come to drink and cool themselves in the river; and because they are not able to drag them into the deep water, they make up by stratagem what they want in force. They swallow great stones, the weight of which being added to their strength, enables them to tug a moderate cow under water, and as soon as they have drowned her, they discharge the stones out of their maw and then feast upon the carcass. However, as fierce and as strong as these monsters are, the Indians will surprise them napping as they float upon the surface, get astride upon their necks, then whip a short piece of wood like a truncheon into their jaws, and holding the ends with their two hands, hinder them from diving by keeping their mouths open, and when they are almost spent, they will make to the shore, where their riders knock them on the head and eat them. This amphibious animal is a smaller kind of crocodile, having the same shape exactly, only the crocodile of the Nile is twice as long, being when full grown from twenty to thirty feet. This enormous length is the more to be wondered at, because the crocodile is hatched from an egg very little larger than that of a goose. It has a long head, which it can open very wide, with very sharp and strong teeth. Their eyes are small, their legs short, with claws upon their feet. Their tail makes half the length of their body, and the whole is guarded with hard impenetrable scales, except the belly, which is much softer and smoother. They keep much upon the land in the day time, but towards the evening retire into the water to avoid the cold dews of the night. They run pretty fast right forward, but are very awkward and slow in turning, by reason of their unwieldy length. It is an error that they have no tongue, without which they could hardly swallow their food; but in eating they move the upper jaw only, contrary to all other animals. The way of catching them in Egypt is, with a strong hook fixed to the end of a chain and baited with a joint of pork, which they are very fond of. But a live hog is generally tied near, the cry of which allures them to the hook. This account of the crocodile will agree in most particulars with the alligator, only the bigness of the last cannot entitle it to the name of "leviathan," which Job gave formerly to the crocodile, and not to the whale, as some interpreters would make us believe.

So soon as the Catawba Indians are informed of the approach of the Virginia caravans, they send a detachment of their warriors to bid them welcome, and escort them safe to their town, where they are received with great marks of distinction. And their courtesies to the Virginia traders, I dare say, are very sincere, because they sell them better goods and better penny-worths than the traders of Carolina. They commonly reside among the Indians till they have bartered their goods away for skins, with which they load their horses and come back by the same path they went. There are generally some Carolina traders that constantly live among the Catawbas,

and pretend to exercise a dictatorial authority over them. These petty rulers do not only teach the honest savages all sorts of debauchery, but are unfair in their dealings, and use them with all kinds of oppression. Nor has their behaviour been at all better to the rest of the Indian nations, among whom they reside, by abusing their women and evil-entreating their men; and, by the way, this was the true reason of the fatal war which the nations round about made upon Carolina in the year 1713. Then it was that all the neighbouring Indians, grown weary of the tyranny and injustice with which they had been abused for many years, resolved to endure their bondage no longer, but entered into a general confederacy against their oppressors of Carolina. The Indians opened the war by knocking most of those little tyrants on the head that dwelt amongst them, under pretence of regulating their commerce, and from thence carried their resentment so far as to endanger both North and South Carolina.

16th. We gave orders that the horses should pass Roanoke river at Monisep ford, while most of the baggage was transported in a canoe. We landed at the plantation of Cornelius Keith, where I beheld the wretchedest scene of poverty I had ever met with in this happy part of the world. The man, his wife and six small children, lived in a pen, like so many cattle, without any roof over their heads but that of heaven. And this was their airy residence in the day time, but then there was a fodder stack not far from this inclosure, in which the whole family sheltered themselves at night and in bad weather. However, it was almost worth while to be as poor as this man was, to be as perfectly contented. All his wants proceeded from indolence, and not from misfortune. He had good land, as well as good health and good limbs to work it, and, besides, had a trade very useful to all the inhabitants round about. He could make and set up quern stones very well, and had proper materials for that purpose just at hand, if he could have taken the pains to fetch them. There is no other kind of mills in those remote parts, and, therefore, if the man would have worked at his trade, he might have lived very comfortably. The poor woman had a little more industry, and spun cotton enough to make a thin covering for her own and her children's nakedness. I am sorry to say it, but idleness is the general character of the men in the southern parts of this colony as well as in North Carolina. The air is so mild, and the soil so fruitful, that very little labour is required to fill their bellies, especially where the woods afford such plenty of game. These advantages discharge the men from the necessity of killing themselves with work, and then for the other article of raiment, a very little of that will suffice in so temperate a climate. But so much as is absolutely necessary falls to the good women's share to provide. They all spin, weave and knit, whereby they make a good shift to clothe the whole family; and to their credit be it recorded, many of them do it very completely, and thereby reproach their husbands' laziness in the most inoffensive way, that is to say, by discovering a better spirit of industry in themselves.

From hence we moved forward to colonel Mumford's other plantation, under the care of Miles Riley, where, by that gentleman's directions, we were again supplied with many good things. Here it was we discharged our worthy friend and fellow traveller, Mr. Bearskin, who had so plentifully supplied us with provisions during our long expedition. We rewarded him to his heart's content, so that he returned to his town loaded with riches and the reputation of having been a great discoverer.

17th. This being Sunday, we were seasonably put in mind how much we were obliged to be thankful for our happy return to the inhabitants. Indeed, we had great reason to reflect with gratitude on the signal mercies we had received. First, that we had, day by day, been fed by the bountiful hand of



Providence in the desolate wilderness, inasmuch that if any of our people wanted one single meal during the whole expedition, it was entirely owing to their own imprudent management. Secondly, that not one man of our whole company had any violent distemper or bad accident befall him, from one end of the line to the other. The very worst that happened was, that one of them gave himself a smart cut on the pan of his knee with a tomahawk, which we had the good fortune to cure in a short time, without the help of a surgeon. As for the misadventures of sticking in the mire and falling into rivers and creeks, they were rather subjects of mirth than complaint, and served only to diversify our travels with a little farcical variety. And, lastly, that many uncommon incidents have concurred to prosper our undertaking. We had not only a dry spring before we went out, but the preceding winter, and even a year or two before, had been much drier than ordinary. This made not only the Dismal, but likewise most of the sunken grounds near the sea-side, just hard enough to bear us, which otherwise had been quite impassable. And the whole time we were upon the business, which was in all about sixteen weeks, we were never caught in the rain except once, nor was our progress interrupted by bad weather above three or four days at most. Besides all this, we were surprised by no Indian enemy, but all of us brought our scalps back safe upon our heads. This cruel method of scalping of enemies is practised by all the savages in America, and perhaps is not the least proof of their original from the northern inhabitants of Asia. Among the ancient Scythians it was constantly used, who carried about these hairy scalps as trophies of victory. They served them too as towels at home, and trappings for their horses abroad. But these were not content with the skin of their enemies' heads, but also made use of their skulls for cups to drink out of upon high festival days, and made greater ostentation of them than if they had been made of gold or the purest crystal.

Besides the duties of the day, we christened one of our men who had been bred a quaker. The man desired this of his own mere motion, without being tampered with by the parson, who was willing every one should go to heaven his own way. But whether he did it by the conviction of his own reason, or to get rid of some troublesome forms and restraints, to which the saints of that persuasion are subject, I cannot positively say.

18th. We proceeded over a level road twelve miles, as far as George Hix's plantation, on the south side of Meherrin river, our course being for the most part north-east. By the way we hired a cart to transport our baggage, that we might the better befriend our jaded horses. Within two miles of our journey's end this day, we met the express we had sent the Saturday before to give notice of our arrival. He had been almost as expeditious as a carrier pigeon, riding in two days no less than two hundred miles.

All the grandees of the Sapponi nation did us the honour to repair hither to meet us, and our worthy friend and fellow traveller, Bearskin, appeared among the gravest of them in his robes of ceremony. Four young ladies of the first quality came with them, who had more the air of cleanliness than any copper-coloured beauties I had ever seen; yet we resisted all their charms, notwithstanding the long fast we had kept from the sex, and the hard diet we had been so long engaged in. Nor can I say the price they set upon their charms was at all exorbitant. A princess for a pair of red stockings cannot, surely, be thought buying repentance much too dear. The men had something great and venerable in their countenances, beyond the common mien of savages; and indeed they ever had the reputation of being the honestest, as well as the bravest Indians we have ever been acquainted with. This people is now made up of the remnants of several other nations, of

which the most considerable are the Sapponies, the Occaneeches, and Stouken-hocks, who not finding themselves separately numerous enough for their defence, have agreed to unite into one body, and all of them now go under the name of the Sapponies. Each of these was formerly a distinct nation, or rather a several clan or canton of the same nation, speaking the same language, and using the same customs. But their perpetual wars against all other Indians, in time, reduced them so low as to make it necessary to join their forces together. They dwelt formerly not far below the mountains, upon Yadkin river, about two hundred miles west and by south from the falls of Roanoke. But about twenty-five years ago they took refuge in Virginia, being no longer in condition to make head not only against the northern Indians, who are their implacable enemies, but also against most of those to the south. All the nations round about, bearing in mind the havoc these Indians used formerly to make among their ancestors in the insolence of their power, did at length avenge it home upon them, and made them glad to apply to this government for protection. Colonel Spotswood, our then lieutenant governor, having a good opinion of their fidelity and courage, settled them at Christanna, ten miles north of Roanoke, upon the belief that they would be a good barrier, on that side of the country, against the incursion of all foreign Indians. And in earnest they would have served well enough for that purpose, if the white people in the neighbourhood had not debauched their morals, and ruined their health with rum, which was the cause of many disorders, and ended at last in a barbarous murder committed by one of these Indians when he was drunk, for which the poor wretch was executed when he was sober. It was matter of great concern to them, however, that one of their grandees should be put to so ignominious a death. All Indians have as great an aversion to hanging as the Muscovites, though perhaps not for the same cleanly reason: these last believing that the soul of one that dies in this manner, being forced to sally out of the body at the postern, must needs be defiled. The Sapponies took this execution so much to heart, that they soon after quitted their settlement and removed in a body to the Catawbas. The daughter of the Tetero king went away with the Sapponies, but being the last of her nation, and fearing she should not be treated according to her rank, poisoned herself, like an old Roman, with the root of the trumpet plant. Her father died two years before, who was the most intrepid Indian we have been acquainted with. He had made himself terrible to all other Indians by his exploits, and had escaped so many dangers that he was esteemed invulnerable. But at last he died of a pleurisy, the last man of his race and nation, leaving only that unhappy daughter behind him, who would not long survive him.

The most uncommon circumstance in this Indian visit was, that they all came on horse-back, which was certainly intended for a piece of state, because the distance was but three miles, and it is likely they had walked on foot twice as far to catch their horses. The men rode more awkwardly than any Dutch sailor, and the ladies bestrode their palfreys a la mode de France, but were so bashful about it, that there was no persuading them to mount till they were quite out of our sight. The French women used to ride a-straddle, not so much to make them sit firmer in the saddle, as from the hopes the same thing might peradventure befall them that once happened to the nun of Orleans, who, escaping out of a nunnery, took post en cavalier, and in ten miles' hard riding had the good fortune to have all the tokens of a man break out upon her. This piece of history ought to be the more credible, because it leans upon much the same degree of proof as the tale of bishop Burnet's two Italian nuns, who, according to his lordship's account, underwent the same happy metamorphosis, probably by some other violent exercise.



19th. From hence we despatched the cart with our baggage under a guard, and crossed Meherrin river, which was not thirty yards wide at that place. By the help of fresh horses, that had been sent us, we now began to mend our pace, which was also quickened by the strong inclinations we had to get home. In the distance of five miles we forded Meherrin creek, which was very near as broad as the river. About eight miles farther we came to Sturgeon creek, so called from the dexterity an Occaneechy Indian showed there in catching one of those royal fish, which was performed after the following manner. In the summer time it is no unusual thing for sturgeons to sleep on the surface of the water, and one of them having wandered up into this creek in the spring, was floating in that drowsy condition. The Indian, above-mentioned, ran up to the neck into the creek a little below the place where he discovered the fish, expecting the stream would soon bring his game down to him. He judged the matter right, and as soon as it came within his reach, he whipped a running noose over his jole. This waked the sturgeon, which being strong in its own element darted immediately under water and dragged the Indian after him. The man made it a point of honour to keep his hold, which he did to the apparent danger of being drowned. Sometimes both the Indian and the fish disappeared for a quarter of a minute, and then rose at some distance from where they dived. At this rate they continued flouncing about, sometimes above and sometimes under water, for a considerable time, till at last the hero suffocated his adversary, and hauled his body ashore in triumph.

About six miles beyond that, we passed over Wicco-quoi creek, named so from the multitude of rocks over which the water tumbles, in a fresh, with a bellowing noise. Not far from where we went over, is a rock much higher than the rest, that strikes the eye with agreeable horror, and near it a very talkative echo, that, like a fluent help-mate, will return her good man seven words for one, and after all be sure to have the last. It speaks not only the language of men, but also of birds and beasts, and often a single wild goose is cheated into the belief that some of his company are not far off, by hearing his own cry multiplied; and it is pleasant to see in what a flutter the poor bird is, when he finds himself disappointed. On the banks of this creek are very broad low-grounds in many places, and abundance of good high-land, though a little subject to floods.

We had but two miles more to captain Embury's, where we found the housekeeping much better than the house. Our bountiful landlady had set her oven and all her spits, pots, gridirons and saucepans to work, to diversify our entertainment, though after all it proved but a Mahometan feast, there being nothing to drink but water. The worst of it was, we had unluckily outrode the baggage, and for that reason were obliged to lodge very sociably in the same apartment with the family, where, reckoning women and children, we mustered in all no less than nine persons, who all pigged lovingly together.

20th. In the morning colonel Bolling, who had been surveying in the neighbourhood, and Mr. Walker, who dwelt not far off, came to visit us; and the last of these worthy gentlemen, fearing that our drinking so much water might incline us to pleurisies, brought us a kind supply both of wine and cider. It was noon before we could disengage ourselves from the courtesies of this place, and then the two gentlemen above-mentioned were so good as to accompany us that day's journey, though they could by no means approve of our Lithuanian fashion of dismounting now and then, in order to walk part of the way on foot. We crossed Nottoway river not far from our landlord's house, where it seemed to be about twenty-five yards over. This river divides the county of Prince George from that of Brunswick. We had

not gone eight miles farther before our eyes were blessed with the sight of Saponi chapel, which was the first house of prayer we had seen for more than two calendar months. About three miles beyond that, we passed over Stony creek, where one of those that guarded the baggage killed a polecat, upon which he made a comfortable repast. Those of his company were so squeamish they could not be persuaded at first to taste, as they said, of so unsavoury an animal; but seeing the man smack his lips with more pleasure than usual, they ventured at last to be of his mess, and instead of finding the flesh rank and high-tasted, they owned it to be the sweetest morsel they had ever eaten in their lives. The ill savour of this little beast lies altogether in its urine, which nature has made so detestably ill-scented on purpose to furnish a helpless creature with something to defend itself. For as some brutes have horns and hoofs, and others are armed with claws, teeth and tusks for their defence; and as some spit a sort of poison at their adversaries, like the paco; and others dart quills at their pursuers, like the porcupine; and as some have no weapons to help themselves but their tongues, and others none but their tails; so the poor polecat's safety lies altogether in the irresistible stench of its water; insomuch that when it finds itself in danger from an enemy, it moistens its bushy tail plentifully with this liquid ammunition, and then, with great fury, sprinkles it like a shower of rain full into the eyes of its assailant, by which it gains time to make its escape. Nor is the polecat the only animal that defends itself by a stink. At the cape of Good Hope is a little beast, called a stinker, as big as a fox, and shaped like a ferret, which being pursued has no way to save itself but by ejecting its wind and excrements, and then such a stench ensues that none of its pursuers can possibly stand it.

At the end of thirty good miles, we arrived in the evening at colonel Bolling's, where first, from a primitive course of life, we began to relapse into luxury. This gentleman lives within hearing of the falls of Appomattox river, which are very noisy whenever a flood happens to roll a greater stream than ordinary over the rocks. The river is navigable for small craft as high as the falls, and at some distance from thence fetches a compass, and runs nearly parallel with James river almost as high as the mountains. While the commissioners fared sumptuously here, the poor chaplain and two surveyors, having stopped ten miles short at a poor planter's house, in pity to their horses, made a St. Anthony's meal, that is, they supped upon the pickings of what stuck in their teeth ever since breakfast. But to make them amends, the good man laid them in his own bed, where they all three nestled together in one cotton sheet and one of brown oznaburghs, made still something browner by two months' copious perspiration. But those worthy gentlemen were so alert in the morning after their light supper, that they came up with us before breakfast, and honestly paid their stomachs all they owed them.

21st. We made no more than a Sabbath day's journey from this to the next hospitable house, namely, that of our great benefactor, colonel Mumford. We had already been much befriended by this gentleman, who, besides sending orders to his overseers at Roanoke to let us want for nothing, had, in the beginning of our business, been so kind as to recommend most of the men to us who were the faithful partners of our fatigue. Although in most other achievements those who command are apt to take all the honour to themselves of what perhaps was more owing to the vigour of those who were under them, yet I must be more just, and allow these brave fellows their full share of credit for the service we performed, and must declare, that it was in a great measure owing to their spirit and indefatigable industry that we over-

came many obstacles in the course of our line, which till then had been esteemed insurmountable. Nor must I at the same time omit to do justice to the surveyors, and particularly to Mr. Mayo, who, besides an eminent degree of skill, encountered the same hardships and underwent the same fatigue that the forwardest of the men did, and that with as much cheerfulness as if pain had been his pleasure, and difficulty his real diversion. Here we discharged the few men we had left, who were all as ragged as the Gibeonite ambassadors, though, at the same time, their rags were very honourable, by the service they had so vigorously performed in making them so.

22d. A little before noon we all took leave and dispersed to our several habitations, where we were so happy as to find all our families well. This crowned all our other blessings, and made our journey as prosperous as it had been painful. Thus ended our second expedition, in which we extended the line within the shadow of the Chariky mountains, where we were obliged to set up our pillars, like Hercules, and return home. We had now, upon the whole, been out about sixteen weeks, including going and returning, and had travelled at least six hundred miles, and no small part of that distance on foot. Below, towards the seaside, our course lay through marshes, swamps, and great waters; and above, over steep hills, craggy rocks, and thickets, hardly penetrable. Notwithstanding this variety of hardships, we may say, without vanity, that we faithfully obeyed the king's orders, and performed the business effectually, in which we had the honour to be employed. Nor can we by any means reproach ourselves of having put the crown to any exorbitant expense in this difficult affair, the whole charge, from beginning to end, amounting to no more than one thousand pounds. But let no one concerned in this painful expedition complain of the scantiness of his pay, so long as his majesty has been graciously pleased to add to our reward the honour of his royal approbation, and to declare, notwithstanding the desertion of the Carolina commissioners, that the line by us run shall hereafter stand as the true boundary betwixt the governments of Virginia and North Carolina.

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*The Names of the Commissioners to direct the running of the Line between Virginia and North Carolina.*

WILLIAM BYRD, RICHARD FITZ-WILLIAM, WILLIAM DANDRIDGE,	}	ESQUIRES, Commissioners for Virginia.
CHRISTOPHER GALE, JOHN LOVEWICK, EDWARD MOSELEY, WILLIAM LITTLE,	}	ESQUIRES, Commissioners for Carolina.
ALEXANDER IRVIN, WILLIAM MAYO,	}	SURVEYORS for Virginia.
EDWARD MOSELEY, SAMUEL SWAN,	}	SURVEYORS for N. Carolina.

THE REVEREND PETER FOUNTAIN, Chaplain.

*Names of the Men employed on the part of Virginia to run the Line between that Colony and North Carolina.*

## ON THE FIRST EXPEDITION.

1. Peter Jones,
2. Thomas Jones,
3. Thomas Short,
4. Robert Hix,
5. John Evans,
6. Stephen Evans,
7. John Ellis,
8. John Ellis, Jr.
9. Thomas Wilson,
10. George Tilman,
11. Charles Kimbal,
12. George Hamilton,
13. Robert Allen,
14. Thomas Jones, Jr.
15. James Petillo,
16. Richard Smith,
17. John Rice.

## ON THE SECOND EXPEDITION.

- Peter Jones,  
 Thomas Jones,  
 Thomas Short,  
 Robert Hix,  
 John Evans,  
 Stephen Evans,  
 John Ellis,  
 John Ellis, Jr.  
 Thomas Wilson,  
 George Tilman,  
 Charles Kimbal,  
 George Hamilton,  
 Thomas Jones, Jr.  
 James Petillo,  
 Richard Smith,  
 Abraham Jones,  
 Edward Powell,  
 William Pool,  
 William Calvert,  
 James Whitlock,  
 Thomas Page.

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*Account of the Expense of running the Line between Virginia and North Carolina.*

To the men's wages in current money	-	-	-	-	£277	10	0
To sundry disbursements for provisions, &c.	-	-	-	-	174	01	6
To paid the men for seven horses lost	-	-	-	-	44	0	0
					£495	11	6

The sum of £495 11 6 current money reduced at 15 per cent.							
sterling amounts to	-	-	-	-	-	£430	8 10
To paid to colonel Byrd	-	-	-	-	-	142	5 7
To paid to colonel Dandridge	-	-	-	-	-	142	5 7
To paid Mr. Fitz-william	-	-	-	-	-	94	0 0
To paid to the chaplain, Mr. Fountain	-	-	-	-	-	20	0 0
To paid to Mr. William Mayo	-	-	-	-	-	75	0 0
To paid to Mr. Alexander Irvin	-	-	-	-	-	75	0 0
To paid for a tent and marquis	-	-	-	-	-	20	0 0
						£1000	0 0

This sum was discharged by a warrant out of his majesty's quitrents from the lands in Virginia.

## APPENDIX

To the foregoing journal, containing the second charter to the proprietors of Carolina, confirming and enlarging the first, and also several other acts to which it refers. These are placed by themselves at the end of the book, that they may not interrupt the thread of the story, and the reader will be more at liberty whether he will please to read them or not, being something dry and unpleasant.

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*The second Charter granted by King Charles II. to the Proprietors of Carolina.\**

CHARLES, by the grace of God, &c.: Whereas, by our letters patent, bearing date the four and twentieth day of March, in the fifteenth year of our reign, we were graciously pleased to grant unto our right trusty and right well beloved cousin and counsellor, Edward, earl of Clarendon, our high chancellor of England, our right trusty and right entirely beloved cousin and counsellor, George, duke of Albemarle, master of our horse, our right trusty and well beloved William, now earl of Craven, our right trusty and well beloved counsellor, Anthony, lord Ashley, chancellor of our exchequer, our right trusty and well beloved counsellor, sir George Carterett, knight and baronet, vice chamberlain of our household, our right trusty and well beloved, sir John Colleton, knight and baronet, and sir William Berkley, knight, all that province, territory, or tract of ground, called Carolina, situate, lying and being within our dominions of America, extending from the north end of the island called Luke island, which lies in the southern Virginia seas, and within six and thirty degrees of the northern latitude; and to the west as far as the South seas; and so respectively as far as the river of Mathias, which bordereth upon the coast of Florida, and within one and thirty degrees of the northern latitude, and so west in a direct line as far as the South seas aforesaid. Now know ye, that, at the humble request of the said grantees in the aforesaid letters patent named, and as a further mark of our especial favour towards them, we are graciously pleased to enlarge our said grant unto them according to the bounds and limits hereafter specified, and in favour to the pious and noble purpose of the said Edward, earl of Clarendon, George, duke of Albemarle, William, earl of Craven, John, lord Berkley, Anthony, lord Ashley, sir George Carterett, sir John Colleton and sir William Berkley, we do give and grant to them, their heirs and assigns, all that province, territory, or tract of ground, situate, lying and being within our dominions of America aforesaid, extending north and eastward as far as the north end of Coratuck river or inlet, upon a straight westerly line to Wyanoke creek, which lies within or about the degrees of thirty-six and thirty minutes northern latitude, and so west in a direct line as far as the South seas; and south and westward as far as the degrees of twenty-nine inclusive northern latitude, and so west in a direct line as far as the South seas; together with all and singular ports, harbours, bays, rivers and inlets belonging unto the province or territory aforesaid. And also, all the soil, lands, fields, woods, mountains, ferms, lakes, rivers, bays and inlets, situate, or be-

\* As this charter is very long, and but a small portion of it has any relation to the subject of dispute between the two colonies, no more will be inserted here than so much as precedes and embraces the matter in controversy.—EDITOR.

ing within the bounds or limits last before mentioned : with the fishing of all sorts of fish, whales, sturgeons, and all other royal fishes in the sea, bays, inlets, and rivers, within the premises, and the fish therein taken ; together with the royalty of the sea, upon the coast within the limits aforesaid. And moreover, all veins, mines and quarries, as well discovered as not discovered, of gold, silver, gems and precious stones, and all other whatsoever ; be it of stones, metals or any other thing found or to be found within the province, territory, inlets and limits aforesaid. \* \* \* \*

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*At the Court of St. James, the 1st day of March, 1710.—Present, the Queen's most excellent majesty in Council.*

Upon reading this day at the board a representation from the right honourable the lords commissioners for trade and plantations, in the words following: In pursuance of your majesty's pleasure, commissioners have been appointed on the part of your majesty's colony of Virginia, as likewise on the part of the province of Carolina, for the settling the bounds between those governments; and they have met several times for that purpose, but have not agreed upon any one point thereof, by reason of the trifling delays of the Carolina commissioners, and of the many difficulties by them raised in relation to the proper observations and survey they were to make. However, the commissioners for Virginia have delivered to your majesty's lieutenant governor of that colony an account of their proceedings, which account has been under the consideration of your majesty's council of Virginia, and they have made a report thereon to the said lieutenant governor, who having lately transmitted unto us a copy of that report, we take leave humbly to lay the substance thereof before your majesty, which is as follows:

That the commissioners of Carolina are both of them persons engaged in interest to obstruct the settling the boundaries between that province and the colony of Virginia ; for one of them has for several years been surveyor general of Carolina, has acquired to himself great profit by surveying lands within the controverted bounds, and has taken up several tracts of land in his own name, and sold the same to others, for which he stands still obliged to obtain patents from the government of Carolina. The other of them is at this time surveyor general, and hath the same prospect of advantage by making future surveys within the said bounds. That the behavior of the Carolina commissioners has tended visibly to no other end than to protract and defeat the settling this affair: and particularly Mr. Moseley has used so many shifts and excuses to disappoint all conferences with the commissioners of Virginia, as plainly show his aversion to proceed in a business that tends so manifestly to his disadvantage. His prevaricating on this occasion has been so indiscreet and so unguarded, as to be discovered in the presence of the lieutenant governor of Virginia. He started so many objections to the powers granted to the commissioners of that colony, with design to render their conferences ineffectual, that his joint commissioner could hardly find an excuse for him. And when the lieutenant governor had with much ado prevailed with the said Mr. Moseley to appoint a time for meeting the commissioners of Virginia, and for bringing the necessary instruments to take the latitude of the bounds in dispute, which instruments he owned were ready in Carolina, he not only failed to comply with his own appointment, but after the commissioners of Virginia had made a journey to his house, and had attended him to the places proper for observing the latitude, he would not take the trouble of carrying his own instrument, but contented himself

to find fault with the quadrant produced by the Virginia commissioners, though that instrument had been approved by the best mathematicians, and is of universal use. From all which it is evident how little hopes there are of settling the boundaries above-mentioned, in concert with the present commissioners for Carolina. That though the bounds of the Carolina charter are in express words limited to Weyanoke creek, lying in or about  $36^{\circ} 30'$  of northern latitude, yet the commissioners for Carolina have not by any of their evidences pretended to prove any such place as Weyanoke creek, the amount of their evidence reaching no further than to prove which is Weyanoke river, and even that is contradicted by affidavit taken on the part of Virginia; by which affidavits it appears that, before the date of the Carolina charter to this day, the place they pretend to be Weyanoke river was, and is still, called Nottoway river. But supposing the same had been called Weyanoke river, it can be nothing to their purpose, there being a great difference between a river and a creek. Besides, in that country there are divers rivers and creeks of the same name, as Potomac river, and Potomac creek, Rappahannock river, and Rappahannock creek, and several others, though there are many miles' distance between the mouths of these rivers and the mouths of these creeks. It is also observable, that the witnesses on the part of Carolina are all very ignorant persons, and most of them of ill fame and reputation, on which account they had been forced to remove from Virginia to Carolina. Further, there appeared to be many contradictions in their testimonies, whereas, on the other hand, the witnesses to prove that the right to those lands is in the government of Virginia are persons of good credit, their knowledge of the lands in question is more ancient than any of the witnesses for Carolina, and their evidence fully corroborated by the concurrent testimony of the tributary Indians. And that right is farther confirmed by the observations lately taken of the latitude in those parts, by which it is plain, that the creek proved to be Weyanoke creek by the Virginia evidences, and sometimes called Wicocon, answers best to the latitude described in the Carolina charter, for it lies in thirty-six degrees, forty minutes, which is ten minutes to the northward of the limits described in the Carolina grant, whereas Nottoway river, lies exactly in the latitude of thirty-seven degrees, and can by no construction be supposed to be the boundary described in their charter; so that upon the whole matter, if the commissioners of Carolina had no other view than to clear the just right of the proprietors, such undeniable demonstrations would be sufficient to convince them; but the said commissioners give too much cause to suspect that they mix their own private interest with the claim of the proprietors, and for that reason endeavour to gain time in order to obtain grants for the land already taken up, and also to secure the rest on this occasion, we take notice, that they proceed to survey the land in dispute, notwithstanding the assurance given by the government of Carolina to the contrary by their letter of the 17th of June, 1707, to the government of Virginia, by which letter they promised that no lands should be taken up within the controverted bounds till the same were settled.

Whereupon we humbly propose, that the lords proprietors be acquainted with the foregoing complaint of the trifling delays of their commissioners, which delays it is reasonable to believe have proceeded from the self-interest of those commissioners, and that therefore your majesty's pleasure be signified to the said lords proprietors, that by the first opportunity they send orders to their governor or commander in chief of Carolina for the time being, to issue forth a new commission, to the purport of that lately issued, thereby constituting two other persons, not having any personal interest in, or claim to, any of the land lying within the boundary, in the room of Ed-

ward Moseley and John Lawson. The Carolina commissioners to be appointed being strictly required to finish their survey, and to make a return thereof in conjunction with the Virginia commissioners, within six months, to be computed from the time, that due notice shall be given by your majesty's lieutenant governor of Virginia to the governor or commander in chief of Carolina, of the time and place, which your majesty's said lieutenant governor shall appoint for the first meeting of the commissioners on one part and the other. In order whereunto we humbly offer, that directions be sent to the said lieutenant governor, to give such notice accordingly; and if after notice so given, the Carolina commissioners shall refuse or neglect to join with those on the part of Virginia, in making such survey, as likewise a return thereof within the time before mentioned; that then and in such case the commissioners on the part of Virginia be directed to draw up an account of the proper observations and survey which they shall have made for ascertaining the bounds between Virginia and Carolina, and to deliver the same in writing under their hands and seals to the lieutenant governor and council of Virginia, to the end the same may be laid before your majesty, for your majesty's final determination therein, within, with regard to the settling of those boundaries; the lords proprietors having, by an instrument under their hands, submitted the same to your majesty's royal determination, which instrument, dated in March, 1708, is lying in this office.

And lastly, we humbly propose, that your majesty's further pleasure be signified to the said lords proprietors, and in like manner to the lieutenant governor of Virginia, that no grants be passed by either of those governments of any of the lands lying within the controverted bounds, until such bounds shall be ascertained and settled as aforesaid, whereby it may appear whether those lands do of right belong to your majesty, or to the lords proprietors of Carolina.

Her majesty in council, approving of the said representation, is pleased to order, as it is hereby ordered, that the right honourable the lords commissioners for trade and plantations do signify her majesty's pleasure herein to her majesty's lieutenant governor or commander in chief of Virginia for the time being, and to all persons to whom it may belong, as is proposed by their lordships in the said representation, and the right honourable the lords proprietors of Carolina are to do what on their part does appertain.

EDWARD SOUTHWELL.

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*Proposals for determining the Controversy relating to the bounds between the governments of Virginia and North Carolina, most humbly offered for his Majesty's royal approbation, and for the consent of the right honourable the Lords Proprietors of Carolina.*

Forasmuch as the dispute between the said two governments about their true limits continues still, notwithstanding the several meetings of the commissioners, and all the proceedings of many years past, in order to adjust that affair, and seeing no speedy determination is likely to ensue, unless some medium be found out, in which both parties may incline to acquiesce, wherefore both the underwritten governors having met, and considered the prejudice both to the king and the lords proprietors' interest, by the continuance of this contest, and truly endeavouring a decision, which they judge comes nearest the intention of royal charter granted to the lords proprietors, do, with the advice and consent of their respective councils, propose as follows.



That from the mouth of Coratuck river or inlet, and setting the compass on the north shore, thereof a due west line be run and fairly marked, and if it happen to cut Chowan river, between the mouths of Nottoway river and Wicocon creek, then shall the same direct course be continued towards the mountains, and be ever deemed the sole dividing line between Virginia and Carolina.

That if the said west line cuts Chowan river to the southward of Wicocon creek, then from point of intersection the bounds shall be allowed to continue up the middle of the said Chowan river to the middle of the entrance into the said Wicocon creek, and from thence a due west line shall divide the said two governments.

That if a due west line shall be found to pass through islands or to cut out small slips of land, which might much more conveniently be included in one province or the other by natural water bounds, in such cases the persons appointed for running the line shall have power to settle natural bounds, provided the commissioners of both sides agree thereto, and that all such variations from the west line, be particularly noted in the maps or plats, which they shall return, to be put upon the records of both governments, all which is humbly submitted by

CHARLES EDEN.  
A. SPOTSWOOD.

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*Order of the King and Council upon the foregoing proposals, at the Court of St. James, the 26th day of March, 1729. Present, the King's most excellent majesty in Council.*

Whereas it has been represented to his majesty at the board, that for adjusting the disputes, which have subsisted for many years past, between the colonies of Virginia and North Carolina, concerning their true boundaries, the late governors of the said colonies did some time since agree upon certain proposals for regulating the said boundaries for the future, to which proposals the lords proprietors of Carolina have given their assent; and whereas the said proposals were this day presented to his majesty as proper for his royal approbation,

His majesty is thereupon pleased, with the advice of his privy council, to approve of the said proposals, a copy whereof is hereunto annexed, and to order, as it is hereby ordered, that the governor or commander in chief of the colony of Virginia, do settle the said boundaries, in conjunction with the governor of North Carolina, agreeably to the said proposals.

EDWARD SOUTHWELL.

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*The Lieutenant Governor of Virginia's Commission in obedience to his Majesty's Order.*

George the Second, by the grace of God, of Great Britain, France and Ireland king, defender of the faith, to our trusty and well beloved William Byrd, Richard Fitz-william, and William Dandridge, Esqrs., members of our council of the colony and dominion of Virginia, greeting: Whereas our late royal father of blessed memory was graciously pleased, by order in his privy council, bearing date the 28th day of March 1727, to approve of certain proposals agreed upon by Alexander Spotswood, Esq. late lieutenant governor of Virginia, on the one part, and Charles Eden, Esq. late governor

of the province of North Carolina, for determining the controversy relating to the bounds between the said two governments, and was farther pleased to direct and order, that the said boundaries should be laid out and settled agreeably to the said proposals. Know ye, therefore, that reposing special trust and confidence in your ability and provident circumspection, have assigned, constituted and appointed, and by these presents do assign, constitute and appoint you and every of you jointly and severally, our commissioners for and on behalf of our colony and dominion of Virginia, to meet the commissioners appointed or to be appointed on the part of the province of North Carolina, and in conjunction with them to cause a line or lines of division to be run and marked, to divide the said two governments according to the proposals above-mentioned, and the order of our late royal father, copies of both which you will herewith receive. And we do further give and grant unto you, and in case of the death or absence of any of you, such of you as shall be present, full power and authority to treat and agree with the said commissioners of the province of North Carolina on such rules and methods as you shall judge most expedient for the adjusting and finally determining all disputes or controversies which may arise, touching any islands or other small slips of land which may happen to be intersected or cut off by the dividing line aforesaid, and which may with more conveniency be included in the one province or the other by natural water bounds, agreeably to the proposals aforementioned, and generally to do and perform all matters and things requisite for the final determination and settlement of the said boundaries, according to the said proposals. And to the end our service herein may not be disappointed through the refusal or delay of the commissioners for the province of North Carolina, to act in conjunction with you in settling the boundaries aforesaid, we do hereby give and grant unto you, or such of you as shall be present at the time and place appointed for running the dividing line aforesaid, full power and authority to cause the said line to be run and marked out, conformable to the said proposals, having due regard to the doing equal justice to us, and to the lords proprietors of Carolina, any refusal, disagreement, or opposition of the said commissioners of North Carolina notwithstanding. And in that case we do hereby require you to make a true report of your proceedings to our lieutenant governor, or commander in chief of Virginia, in order to be laid before us for our approbation, and final determination herein. And in case any person or persons whatsoever shall presume to disturb, molest or resist you, or any of the officers or persons by your direction, in running the said line, and executing the powers herein given you, we do by these presents give and grant unto you, or such of you as shall be attending the service aforesaid, full power and authority by warrant under your or any of your hands and seals, to order and command all and every the militia officers in our counties of Princess Anne, Norfolk, Nansemond, and Isle of Wight, or other the adjacent counties, together with the sheriff of each of the said counties, or either of them, to raise the militia and posse of the said several counties, for the removing all force and opposition, which shall or may be made to you in the due execution of this our commission, and we do hereby will and require, as well the officers of the militia, as all other our officers and loving subjects within the said counties, and all others whom it may concern, to be obedient, aiding and assisting unto you in all and singular the premises. And we do in like manner command and require you, to cause fair maps and descriptions of the said dividing line, and the remarkable places through which it shall pass, to be made and returned to our lieutenant governor or commander in chief of our said colony for the time being, in order to be entered on record in the proper offices within our said colony. Provided that

you do not, by colour of this our commission, take upon you or determine any private man's property, in or to the lands which shall by the said dividing line be included within the limits of Virginia, nor of any other matter or thing that doth not relate immediately to the adjusting, settling, and final determination of the boundary aforesaid, conformable to the proposals hereinbefore mentioned, and not otherwise. In witness whereof we have caused these presents to be made. Witness our trusty and well beloved William Gooch, Esq. our lieutenant governor and commander in chief of our colony and dominion of Virginia, under the seal of our said colony, at Williamsburg, the 14th day of December, 1727, in the first year of our reign.

WILLIAM GOOCH.

*The Governor of North Carolina's Commission in obedience to his Majesty's Order.*

Sir Richard Everard, baronet, governor, captain general, admiral, and commander in chief of the said province: To Christopher Gale, Esq. chief justice, John Lovick, Esq., secretary, Edward Moseley, Esq., surveyor general and William Little, Esq., attorney general, greeting: Whereas many disputes and differences have formerly been between the inhabitants of this province and those of his majesty's colony of Virginia, concerning the boundaries and limits between the said two governments, which having been duly considered by Charles Eden, Esq., late governor of this province, and Alexander Spotswood, Esq., late governor of Virginia, they agreed to certain proposals for determining the said controversy, and humbly offered the same for his majesty's royal approbation, and the consent of the true and absolute lords proprietors of Carolina. And his majesty having been pleased to signify his royal approbation of those proposals (consented unto by the true and absolute lords proprietors of Carolina) and given directions for adjusting and settling the boundaries as near as may be to the said proposals:

I, therefore, reposing especial trust and confidence in you, the said Christopher Gale, John Lovick, Edward Moseley and William Little, to be commissioners, on the part of the true and absolute lords proprietors, and that you in conjunction with such commissioners as shall be nominated for Virginia, use your utmost endeavours, and take all necessary care in adjusting and settling the said boundaries, by drawing such a distinct line or lines of division between the said two provinces, as near as reasonable you can to the proposals made by the two former governors, and the instructions herewith given you. Given at the council chamber in Edenton, under my hand, and the seal of the colony, the 21st day of February, anno Domini 1727, and in the first year of the reign of our sovereign lord, king George the Second.

RICHARD EVERARD.

*The Protest of the Carolina Commissioners, against our proceeding on the Line without them.*

We the underwritten commissioners for the government of North Carolina, in conjunction with the commissioners on the part of Virginia, having run the line for the division of the two colonies from Coratuck inlet, to the south branch of Roanoke river; being in the whole about one hundred and seventy miles, and near fifty miles without the inhabitants, being of opinion we had run the line as far as would be requisite for a long time, judged the

carrying it farther would be a needless charge and trouble. And the grand debate which had so long subsisted between the two governments, about Weyanoke river or creek, being settled at our former meeting in the spring, when we were ready on our parts to have gone with the line to the utmost inhabitants, which if it had been done, the line at any time after might have been continued at an easy expense by a surveyor on each side; and if at any time hereafter there should be occasion to carry the line on further than we have now run it, which we think will not be in an age or two, it may be done in the same easy manner, without the great expense that now attends it. And on a conference of all the commissioners, we have communicated our sentiments thereon, and declared our opinion, that we had gone as far as the service required, and thought proper to proceed no farther; to which it was answered by the commissioners for Virginia, that they should not regard what we did, but if we desisted, they would proceed without us. But we, conceiving by his majesty's order in council they were directed to act in conjunction with the commissioners appointed for Carolina, and having accordingly run the line jointly so far, and exchanged plans, thought they could not carry on the bounds singly; but that their proceedings without us would be irregular and invalid, and that it would be no boundary, and thought proper to enter our dissent thereto. Wherefore, for the reasons aforesaid, in the name of his excellency the lord palatine, and the rest of the true and absolute lords proprietors of Carolina, we do hereby dissent and disallow of any farther proceeding with the bounds without our concurrence, and pursuant to our instructions do give this our dissent in writing.

EDWARD MOSELEY.  
WILLIAM LITTLE.  
C. GALE.  
J. LOVICK.

October 7th, 1728.

*The Answer of the Virginia Commissioners to the foregoing Protest.*

Whereas, on the 7th of October last, a paper was delivered to us by the commissioners of North Carolina, in the style of a protest, against our carrying any farther, without them, the dividing line between the two governments, we, the underwritten commissioners on the part of Virginia, having maturely considered the reasons offered in the said protest, why those gentlemen retired so soon from that service, beg leave to return the following answer:

They are pleased in the first place to allege, by way of reason, that having run the line near fifty miles beyond the inhabitants, it was sufficient for a long time, in their opinion for an age or two. To this we answer that, by breaking off so soon, they did but imperfectly obey his majesty's order, assented to by the lords proprietors. The plain meaning of that order was, to ascertain the bounds betwixt the two governments as far towards the mountains as we could, that neither the king's grants may hereafter encroach on the lords proprietors', nor theirs on the rights of his majesty. And though the distance towards the great mountains be not precisely determined, yet surely the west line should be carried as near them as may be, that both the king's lands and those of their lordships, may be taken up the faster, and that his majesty's subjects may as soon as possible extend themselves to that natural barrier. This they will certainly do in a few years, when they know distinctly in which government they may enter for the land, as they have already done in the more northern parts of Virginia. So that it is strange the Carolina commissioners should affirm, that the distance only of fifty miles above the inhabitants would be sufficient to carry the

line for an age or two, especially considering that, two or three days before the date of their protest, Mr. Mayo had entered with them for two thousand acres of land, within five miles of the place where they left off. Besides, if we reflect on the richness of the soil in those parts, and the convenience for stock, we may foretell, without the spirit of divination, that there will be many settlements higher than those gentlemen went, in less than ten years, and perhaps in half that time.

Another reason mentioned in the protest for their retiring so soon from the service is, that their going farther would be a needless charge and trouble. And they allege that the rest may be done by one surveyor on a side, in an easy manner, whenever it shall be thought necessary.

To this we answer, that frugality for the public is a rare virtue, but when the public service must suffer by it, it degenerates into a vice. And this will ever be the case when gentlemen execute the orders of their superiors by halves. But had the Carolina commissioners been sincerely frugal for their government, why did they carry out provisions sufficient to support them and their men for ten weeks, when they intended not to tarry half that time? This they must own to be true, since they brought one thousand pounds of provisions along with them. Now, after so great an expense in their preparations, it had been no mighty addition to their charge, had they endured the fatigue five or six weeks longer. It would at most have been no more than they must be at, whenever they finish their work, even though they should fancy it proper to trust a matter of that consequence to the management of one surveyor. Such a one must have a number of men along with him, both for his assistance and defence, and those men must have provisions to support them.

These are all the reasons these gentlemen think fit to mention in their protest, though they had in truth a more powerful argument for retiring so abruptly, which, because they forgot, it will be neighbourly to help them out. The provisions they intended to bring along with them, for want of horses to carry them, were partly dropped by the way, and what they could bring was husbanded so ill, that after eighteen days, (which was the whole time we had them in our company,) they had no more left, by their own confession, than two pounds of biscuit for each man, to carry them home. However, though this was an unanswerable reason for gentlemen for leaving the business unfinished, it was none at all for us, who had at that time bread sufficient for seven weeks longer. Therefore, lest their want of management might put a stop to his majesty's service, and frustrate his royal intentions, we judged it our duty to proceed without them, and have extended the dividing line so far west as to leave the great mountains on each hand to the eastward of us. And this we have done with the same fidelity and exactness as if the gentlemen had continued with us. Our surveyors (whose integrity I am persuaded they will not call in question) continued to act under the same oath, which they had done from the beginning. Yet, notwithstanding all this, if the government of North Carolina should not hold itself bound by that part of the line which we made without the assistance of its commissioners, yet we shall have this benefit in it at least, that his majesty will know how far his lands reach towards the south, and consequently where his subjects may take it up, and how far they may be granted without injustice to the lords proprietors. To this we may also add, that having the authority of our commission, to act without the commissioners of Carolina, in case of their disagreement or refusal, we thought ourselves bound upon their retreat to finish the line without them, lest his majesty's service might suffer by any honour or neglect on their part.

WILLIAM DANDRIDGE.  
WILLIAM BYRD.

A  
JOURNEY  
TO  
THE LAND OF EDEN:  
IN THE YEAR 1733.

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September 11th. Having recommended my family to the protection of the Almighty, I crossed the river with two servants and four horses, and rode to Col. Mumford's. There I met my friend, Mr. Banister, who was to be the kind companion of my travels. I stayed dinner with the good colonel, while Mr. Banister made the best of his way home, to get his equipage ready, in order to join me the next day. After dining plentifully, and wishing all that was good to the household, I proceeded to major Mumford's, who had also appointed to go along with me. I was the more obliged to him, because he made me the compliment to leave the arms of a pretty wife, to lie on the cold ground for my sake. She seemed to chide me with her eyes, for coming to take her bedfellow from her, now the cold weather came on, and to make my peace, I was forced to promise to take an abundance of care of him, in order to restore him safe and sound to her embraces.

12th. After the major had cleared his pipes, in calling with much authority about him, he made a shift to truss up his baggage about nine o'clock. Near the same hour my old friend and fellow traveller, Peter Jones, came to us completely accoutred. Then we fortified ourselves with a beef-steak, kissed our landlady for good luck, and mounted about ten. The major took one Robin Bolling with him, as squire of his body, as well as conductor of his baggage. Tom Short had promised to attend me, but had married a wife and could not come. We crossed Hatcher's run, Gravelly run, Stony creek, and in the distance of about twenty miles reached Saponi chapel, where Mr. Banister joined us. Thus agreeably reinforced we proceeded ten miles further, to major Embry's, on the south side of Nottoway river. The major was ill of a purging and vomiting, attended with a fever which had brought him low; but I prescribed him a gallon or two of chicken broth, which washed him as clean as a gun, and quenched his fever. Here major Mayo met us, well equipped for a march into the woods, bringing a surveyor's tent, that would shelter a small troop. Young Tom Jones also repaired hither to make his excuse; but old Tom Jones, by the privilege of his age, neither came nor sent, so that we were not so strong as we intended, being disappointed of three of our ablest foresters. The entertainment we met with was the less sumptuous by reason of our landlord's indisposition. On this occasion we were as little troublesome as possible, by sending part of our company to Richard Birch's, who lives just by the bridge over the river. We sent for an old Indian called Shacco-Will, living about seven miles off, who reckoned himself seventy-eight years old. This fellow pretended he could conduct us to a silver mine,

that lies either upon Eno river, or a creek of it, not far from where the Tuscaroras once lived. But by some circumstances in his story, it seems to be rather a lead than a silver mine. However, such as it is, he promised to go and show it to me whenever I pleased. To comfort his heart, I gave him a bottle of rum, with which he made himself very happy, and all the family very miserable by the horrible noise he made all night.

13th. Our landlord had great relief from my remedy, and found himself easy this morning. On this account we took our departure with more satisfaction, about nine, and having picked up our friends at Mr. Birch's, pursued our journey over Quoque creek, and Sturgeon run, as far as Brunswick court house, about twelve miles beyond Nottoway. By the way, I sent a runner half a mile out of the road to Col. Drury Stith's, who was so good as to come to us. We cheered our hearts with three bottles of pretty good Madeira, which made Drury talk very hopefully of his copper mine. We easily prevailed with him to let us have his company, upon condition we would take the mine in our way. From thence we proceeded to Meherrin river, which lies eight miles beyond the court house, and in our way forded Great creek. For fear of being belated, we called not at my quarter, where Don Pedro is overseer, and lives in good repute amongst his neighbours. In compliment to the little major we went out of our way, to lie at a settlement of his upon Cock's creek, four miles short of Roanoke. Our fare here was pretty coarse, but Mr. Banister and I took possession of the bed, while the rest of the company lay in bulk upon the floor. This night the little major made the first discovery of an impatient and peevish temper, equally unfit both for a traveller and a husband.

14th. In the morning my friend Tom Wilson made me a visit, and gave me his parole that he would meet us at Blue Stone Castle. We took horse about nine, and in the distance of ten miles reached a quarter of Col. Stith's, under the management of John Tomasin. This plantation lies on the west side of Stith's creek, which was so full of water, by reason of a fresh in the river, that we could not ford it, but we and our baggage were paddled over in a canoe, and our horses swam by our sides. After staying here an hour, with some of Diana's maids of honour, we crossed Miles' creek a small distance off, and at the end of eight miles were met by a tall, meager figure, which I took at first for an apparition, but it proved to be Col. Stith's miner. I concluded that the unwholesome vapours arising from the copper mine had made this operator such a skeleton, but upon inquiry understood it was sheer famine had brought him so low. He told us his stomach had not been blessed with one morsel of meat for more than three weeks, and that too he had been obliged to short allowance of bread, by reason corn was scarce and to be fetched from Tomasin's, which was ten long miles from the mine where he lived. However, in spite of this spare diet, the man was cheerful, and uttered no complaint. Being conducted by him, we reached the mines about five o'clock, and pitched our tents, for the first time, there being yet no building erected but a log-house, to shelter the miner and his two negroes. We examined the mine and found it dipped from east to west, and showed but a slender vein, embodied in a hard rock of white spar. The shaft they had opened was about twelve feet deep, and six over. I saw no more than one peck of good ore above ground, and that promised to be very rich. The engineer seemed very sanguine, and had not the least doubt but his employer's fortune was made. He made us the compliment of three blasts, and we filled his belly with good beef in return, which in his hungry circumstances was the most agreeable present we could make him.

15th. It rained in the morning, which made us decamp later than we intended, but the clouds clearing away about ten, we wished good luck to

the mine and departed. We left Col. Stith there to keep fast with his miner, and directed our course through the woods to Boucher's creek, which hath its name from an honest fellow that lives upon it. This place is about six miles from Col. Stith's works, and can also boast of a very fair show of copper ore. It is dug out of the side of a hill, that rises gradually from the creek to the house. The good man was from home himself; but his wife, who was as old as one of the Sibyls, refreshed us with an ocean of milk. By the strength of that entertainment, we proceeded to Mr. Mumford's quarter, about five miles off, where Joseph Colson is overseer. Here our thirsty companions raised their drooping spirits with a cheerful dram, and having wet both eyes, we rode on seven miles farther to Blue Stone Castle, five whereof were through my own land, that is to say, all above Sandy creek. My land there in all extends ten miles upon the river; and three charming islands, namely, Sapponi, Occaneeche, and Toteró, run along the whole length of it. The lowest of these islands is three miles long, the next four, and the uppermost three, divided from each other by only a narrow strait. The soil is rich in all of them, the timber large, and a kind of pea, very grateful to cattle and horses, holds green all the winter. Roanoke river is divided by these islands; that part which runs on the north side is about eighty yards, and that on the south more than one hundred. A large fresh will overflow the lower part of these islands, but never covers all, so that the cattle may always recover a place of security. The middlemost island, called Occaneeche island, has several fields in it where Occaneeche Indians formerly lived, and there are still some remains of the peach trees they planted. Here grow likewise excellent wild hops without any cultivation. My overseer, Harry Morris, did his utmost to entertain me and my company; the worst of it was, we were obliged all to be littered down in one room, in company with my landlady and four children, one of which was very sick, and consequently very fretful.

16th. This being Sunday, and the place where we were quite out of Christendom, very little devotion went forward. I thought it no harm to take a Sabbath day's journey, and rode with my overseer to a new entry I had made upon Blue Stone creek, about three miles from the castle, and found the land very fertile and convenient. It consists of low grounds and meadows on both sides the creek. After taking a view of this, we rode two miles farther to a stony place, where there were some tokens of a copper mine, but not hopeful enough to lay me under any temptation. Then we returned to the company, and found Tom Wilson was come according to his promise, in order to proceed into the woods along with us. Jo. Colson likewise entered into pay, having cautiously made his bargain for a pistole. There were three Tuskeruda Indians, (which I understood had been kept on my plantation to hunt for Harry Morris,) that with much ado were also persuaded to be of the party. My landlady could not forbear discovering some broad signs of the fury, by breaking out into insolent and passionate expressions against the poor negroes. And if my presence could not awe her, I concluded she could be very outrageous when I was a hundred miles off. This inference I came afterwards to understand was but too true, for, between the husband and the wife, the negroes had a hard time of it.

17th. We set off about nine from Blue Stone Castle, and rode up the river six miles, (one half of which distance was on my own land,) as far as major Mumford's quarter, where master Hogen was tenant upon halves. Here were no great marks of industry, the weeds being near as high as the corn. My islands run up within a little way of this place, which will expose them to the inroad of the major's creatures. That called Toteró island lies too convenient not to receive damage that way; but we must guard against



it as well as we can. After the major had convinced himself of the idleness of his tenant, he returned back to Blue Stone, and Harry Morris and I went in quest of a fine copper mine, which he had secured for me in the fork. For which purpose, about a quarter of a mile higher than Hogen's, we crossed a narrow branch of the river into a small island, not yet taken up, and after traversing that, forded a much wider branch into the fork of Roanoke river. Where we landed was near three miles higher up than the point of the fork. We first directed our course easterly towards that point, which was very sharp, and each branch of the river where it divided first seemed not to exceed eighty yards in breadth. The land was broken and barren off from the river, till we came within half a mile of the point where the low-grounds began. The same sort of low ground ran up each branch of the river. That on the Staunton (being the northern branch) was but narrow, but that on the south, which is called the Dan, seemed to carry a width of at least half a mile. After discovering this place, for which I intended to enter, we rode up the mid-land five miles to view the mine, which in my opinion hardly answered the trouble of riding so far out of our way. We returned downwards again about four miles, and a mile from the point found a good ford over the north branch, into the upper end of Totero island. We crossed the river there, and near the head of the island saw a large quantity of wild hops growing, that smelt fragrantly, and seemed to be in great perfection. At our first landing we were so hampered with brambles, vines and poke bushes, that our horses could hardly force their way through them. However, this difficulty held only about twenty-five yards at each end of the island, all the rest being very level and free from underwood. We met with old fields where the Indians had formerly lived, and the grass grew as high as a horse and his rider. In one of these fields were large duck ponds, very firm at the bottom, to which wild fowl resort in the winter. In the woody part of the island grows a vetch, that is green all the winter, and a great support for horses and cattle, though it is to be feared the hogs will root it all up. There is a cave in this island, in which the last Totero king, with only two of his men, defended himself against a great host of northern Indians, and at last obliged them to retire. We forded the strait out of this into Occaneeche island, which was full of large trees, and rich land, and the south part of it is too high for any flood less than Noah's to drown, we rode about two miles down this island, (being half the length of it,) where finding ourselves opposite to Blue Stone Castle, we passed the river in a canoe, which had been ordered thither for that purpose, and joined our friends, very much tired, not so much with the length of the journey, as with the heat of the weather.

18th. We lay by till the return of the messenger that we sent for the ammunition, and other things left at the court house. Nor had the Indians yet joined us according to their promise, which made us begin to doubt of their veracity. I took a solitary walk to the first ford of Blue Stone creek, about a quarter of a mile from the house. This creek had its name from the colour of the stones, which paved the bottom of it, and are so smooth that it is probable they will burn into lime. I took care to return to my company by dinner time, that I might not trespass upon their stomachs. In the afternoon I was paddled by the overseer and one of my servants up the creek, but could proceed little farther than a mile because of the shoal water. All the way we perceived the bottom of the creek full of the blue stones above mentioned, sufficient in quantity to build a large castle. At our return we went into the middle of the river, and stood upon a large blue rock to angle, but without any success. We broke off a fragment of the rock, and found it as heavy as so much lead. Discouraged by our ill luck, we repaired to the

company, who had procured some pieces of copper ore from Cargil's mine, which seemed full of metal. This mine lies about twelve miles higher than major Mumford's plantation, and has a better show than any yet discovered. There are so many appearances of copper in these parts, that the inhabitants seem to be all mine-mad, and neglect making of corn for their present necessities, in hopes of growing very rich hereafter.

19th. The heavens lowered a little upon us in the morning, but, like a damsel ruffled by too bold an address, it soon cleared up again. Because I detested idleness, I caused my overseer to paddle me up the river as far as the strait that divides Occaneeche from Toter island, which is about twenty yards wide. There runs a swift stream continually out of the south part of the river into the north, and is in some places very deep. We crossed the south part to the opposite shore, to view another entry I had made, beginning at Buffalo creek and running up the river to guard my islands, and keep off bad neighbours on that side. The land seems good enough for corn along the river, but a quarter of a mile back it is broken, and full of stones. After satisfying my curiosity, I returned the way that I came, and shot the same strait back again, and paddled down the river to the company. When we got home, we laid the foundation of two large cities. One at Shacco's, to be called Richmond, and the other at the point of Appomattox river, to be named Petersburg. These major Mayo offered to lay out into lots without fee or reward. The truth of it is, these two places being the uppermost landing of James and Appomattox rivers, are naturally intended for marts, where the traffic of the outer inhabitants must centre. Thus we did not build castles only, but also cities in the air. In the evening our ammunition arrived safe, and the Indians came to us, resolved to make part of our company, upon condition of their being supplied with powder and shot, and having the skins of all the deer they killed to their own proper use.

20th. Every thing being ready for a march, we left Blue Stone Castle about ten. My company consisted of four gentlemen (namely, major Mayo, major Mumford, Mr. Banister and Mr. Jones,) and five woodsmen, Thomas Wilson, Henry Morris, Joseph Colson, Robert Bolling and Thomas Hooper, four negroes and three Tuscaruda Indians. With this small troop we proceeded up the river as far as Hogen's, above which, about a quarter of a mile, we forded into the little island, and from thence into the fork of the river. The water was risen so high, that it ran into the top of my boots, but without giving me any cold, although I rode in my wet stockings. We landed three miles above the point of the fork, and, after marching three miles farther, reached the tenement of Peter Mitchell, the highest inhabitant on Roanoke river. Two miles above that we forded a water, which we named Birche's creek, not far from the mouth, where it discharges itself into the Dan. From thence we rode through charming low-grounds, for six miles together, to a larger stream, which we agreed to call Banister river. We were puzzled to find a ford by reason the water was very high, but at last got safe over, about one and a half miles from the banks of the Dan. In our way we killed two very large rattle-snakes, one of fifteen and the other of twelve rattles. They were both fat, but nobody would be persuaded to carry them to our quarters, although they would have added much to the luxury of our supper. We pitched our tents upon Banister river, where we feasted on a young buck which had the ill luck to cross our way. It rained great part of the night, with very loud thunder, which rumbled frightfully amongst the tall trees that surrounded us in that low ground, but, thank God! without any damage. Our Indians killed three deer, but were so lazy they brought them not to the camp, pretending for their excuse that they were too lean.

21st. The necessity of drying our baggage prevented us from marching till eleven o'clock. Then we proceeded through low-grounds which were tolerably wide for three miles together, as far as a small creek, named by us Morris' creek. This tract of land I persuaded Mr. Banister to enter for, that he might not be a loser by the expedition. The low grounds held good a mile beyond the creek, and then the highland came quite to the river, and made our travelling more difficult. All the way we went we perceived there had been tall canes lately growing on the bank of the river, but were universally killed; and inquiring into the reason of this destruction, we were told that the nature of those canes was, to shed their seed but once in seven years, and the succeeding winter to die, and make room for young ones to grow up in their places. Thus much was certain, that four years before we saw canes grow and flourish in several places, where they now lay dead and dry upon the ground. The whole distance we travelled in this day by computation was fifteen miles, and then the appearance of a black cloud, which threatened a gust, obliged us to take up our quarters. We had no sooner got our tents over our heads, but it began to rain and thunder furiously, and one clap succeeded the lightning the same instant, and made all tremble before it. But, blessed be God! it spent its fury upon a tall oak just by our camp. Our Indians were so fearful of falling into the hands of the Catawbias, that they durst not lose sight of us all day; so they killed nothing, and we were forced to make a temperate supper upon bread and cheese. It was strange we met with no wild turkeys, this being the season in which great numbers of them used to be seen towards the mountains. They commonly perched on the high trees near the rivers and creeks. But this voyage, to our great misfortune, there were none to be found. So that we could not commit that abomination, in the sight of all Indians, of mixing the flesh of deer and turkeys in our broth.

22d. We were again obliged to dry our baggage, which had been thoroughly soaked with the heavy rain that fell in the night. While we stayed for that, our hunters knocked down a brace of bucks, wherewith we made ourselves amends for our scanty supper the foregoing night. All these matters being duly performed made it near noon before we sounded to horse. We marched about two miles over fine low-grounds to a most pleasant stream, which we named the Medway, and by the way discovered a rich neck of highland that lay on the south side of the Dan, and looked very tempting. Two miles beyond the Medway, we forded another creek, which we called Maosty creek. The whole distance between these two streams lay exceeding rich lands, and the same continued two miles higher. This body of low-grounds tempted me to enter for it, to serve as a stage between my land at the fork, and the Land of Eden. The heavens looked so menacing that we resolved to take up our quarters two miles above Maosty creek, where we intrenched ourselves on a rising ground. We had no sooner taken these precautions, but it began to rain unmercifully, and to put out our fire as fast as we could kindle it; nor was it only a hasty shower, but continued with great impetuosity most part of the night. We preferred a dry fast to a wet feast, being unwilling to expose the people to the weather, to gratify an unreasonable appetite. However it was some comfort, in the midst of our abstinence, to dream of the delicious breakfast we intended to make next morning, upon a fat doe and two-year-old bear our hunters had killed the evening before. Notwithstanding all the care we could take, several of the men were dripping wet, and, among the rest, Harry Morris dabbled so long in the rain, that he was seized with a violent fit of an ague that shook him almost out of all his patience.

23d. It was no loss of time to rest in our camp according to the duty of

the day, because our baggage was so wet it needed a whole day to dry it. For this purpose we kindled four several fires, in the absence of the sun, which vouchsafed us not one kind look the whole day. My servant had dropped his great-coat yesterday, and two of the men were so good-natured as to ride back and look for it to-day, and were so lucky as to find it. Our Indians having no notion of the sabbath, went out to hunt for something for dinner, and brought a young doe back along with them. They laughed at the English for losing one day in seven; though the joke may be turned upon them for losing the whole seven, if idleness and doing nothing to the purpose may be called loss of time. I looked out narrowly for ginseng, this being the season when it wears its scarlet fruit, but neither now nor any other time during the whole journey could I find one single plant of it. This made me conclude that it delighted not in quite so southerly a climate; and in truth I never heard of its growing on this side of thirty-eight degrees of latitude. But to make amends we saw abundance of sugar trees in all these low-grounds, which the whole summer long the woodpeckers tap, for the sweet juice that flows out of them. Towards the evening a strong north-wester was so kind as to sweep all the clouds away, that had blackened our sky, and moistened our skins, for some time past.

24th. The rest the sabbath had given us made every body alert this morning, so that we mounted before nine o'clock. This diligence happened to be the more necessary, by reason the woods we encountered this day were exceedingly bushy and uneven. At the distance of four miles we forded both branches of Forked creek, which lay within one thousand paces from each other. My horse fell twice under me, but, thank God! without any damage either to himself or his rider; and major Mayo's baggage horse rolled down a steep hill, and ground all his biscuit to rocahominy. My greatest disaster was that, in mounting one of the precipices, my steed made a short turn and gave my knee an unmerciful bang against a tree, and I felt the effects of it several days after. However, this was no interruption of our journey, but we went merrily on, and two miles farther crossed Peter's creek, and two miles after that Jones' creek. Between these creeks was a good breadth of low-grounds, with which Mr. Jones was tempted, though he shook his head at the distance. A little above Jones' creek, we met with a pleasant situation, where the herbage appeared more inviting than usual. The horses were so fond of it that we determined to camp there, although the sun had not near finished his course. This gave some of our company leisure to go out and search for the place where our line first crossed the Dan, and by good luck they found it within half a mile of the camp. But the place was so altered by the desolation which had happened to the canes, (which had formerly fringed the banks of the river a full furlong deep,) that we hardly knew it again. Pleased with this discovery, I forgot the pain in my knee, and the whole company ate their venison without any other sauce than keen appetite.

25th. The weather now befriending us, we despatched our little affairs in good time, and marched in a body to the line. It was already grown very dim, by reason many of the marked trees were burnt or blown down. However, we made shift, after riding little more than half a mile, to find it, and having once found it, stuck as close to it as we could. After a march of two miles, we got upon Cane creek, where we saw the same havoc amongst the old canes that we had observed in other places, and a whole forest of young ones springing up in their stead. We pursued our journey over hills and dales till we arrived at the second ford of the Dan, which we passed with no other damage than sopping a little of our bread, and shipping some water at the tops of our boots. The late rains having been a little immoderate, had raised the water and made a current in the river. We drove on four miles

farther to a plentiful run of very clear water, and quartered on a rising ground a bow-shot from it. We had no sooner pitched the tents, but one of our woodsmen alarmed us with the news that he had followed the track of a great body of Indians to the place where they had lately encamped. That there he had found no less than ten huts, the poles whereof had green leaves still fresh upon them. That each of these huts had sheltered at least ten Indians, who, by some infallible marks, must have been northern Indians. That they must needs have taken their departure from thence no longer ago than the day before, having erected those huts to protect themselves from the late heavy rains. These tidings I could perceive were a little shocking to some of the company, and particularly the little major, whose tongue had never lain still, was taken speechless for sixteen hours. I put as good a countenance upon the matter as I could, assuring my fellow travellers, that the northern Indians were at peace with us, and although one or two of them may now and then commit a robbery or a murder, (as other rogues do,) yet nationally and avowedly they would not venture to hurt us. And in case they were Catawbas, the danger would be as little from them, because they are too fond of our trade to lose it for the pleasure of shedding a little English blood. But supposing the worst, that they might break through all the rules of self-interest, and attack us, yet we ought to stand bravely on our defence, and sell our lives as dear as we could. That we should have no more fear on this occasion, than just to make us more watchful and better provided to receive the enemy, if they had the spirit to venture upon us. This reasoning of mine, though it could not remove the panic, yet it abated something of the palpitation, and made us double our guard. However, I found it took off the edge of most of our appetites, for every thing but the rum bottle, which was more in favor than ever, because of its cordial quality. I hurt my other knee this afternoon, but not enough to spoil either my dancing or my stomach.

26th. We liked the place so little that we were glad to leave it this morning as soon as we could. For that reason we were all on horseback before nine, and after riding four miles arrived at the mouth of Sable creek. On the eastern bank of that creek, six paces from the mouth, and just at the brink of the river Dan, stands a sugar tree, which is the beginning of my fine tract of land in Carolina, called the Land of Eden. I caused the initial letters of my name to be cut on a large poplar and beech near my corner, for the more easy finding it another time. We then made a beginning of my survey, directing our course due south from the sugar tree above-mentioned. In a little way we perceived the creek forked, and the western branch was wide enough to merit the name of a river. That to the east was much less, which we intersected with this course. We ran southerly a mile, and found the land good all the way, only towards the end of it we saw the trees destroyed in such a manner that there were hardly any left to mark my bounds. Having finished this course, we encamped in a charming peninsula, formed by the western branch of the creek. It contained about forty acres of very rich land, gradually descending to the creek, and is a delightful situation for the manor house. My servant had fed so intemperately upon bear, that it gave him a scouring, and that was followed by the piles, which made riding worse to him than purgatory. But anointing with the fat of the same bear, he soon grew easy again.

27th. We were stirring early from this enchanting place, and ran eight miles of my back line, which tended south eighty-four and a half westerly. We found the land uneven, but tolerably good, though very thin of trees, and those that were standing fit for little but fuel and fence-rails. Some conflagration had effectually opened the country, and made room for the air

to circulate. We crossed both the branches of Lowland creek, and sundry other rills of fine water. From every eminence we discovered the mountains to the north-west of us, though they seemed to be a long way off. Here the air felt very refreshing and agreeable to the lungs, having no swamps or marshes to taint it. Nor was this the only good effect it had, but it likewise made us very hungry, so that we were forced, to halt and pacify our appetites with a frugal repast out of our pockets, which we washed down with water from a purling stream just by. My knees pained me very much, though I broke not the laws of travelling by uttering the least complaint. Measuring and marking spent so much of our time, that we could advance no further than eight miles, and the chain carriers thought that a great way. In the evening we took up our quarters in the low-grounds of the river, which our scouts informed us was but two hundred yards ahead of us. This was no small surprise, because we had flattered ourselves that this back line would not have intersected the Dan at all; but we found ourselves mistaken, and plainly perceived that it ran more southerly than we imagined, and in all likelihood pierces the mountains where they form an amphitheatre. The venison here was lean; and the misfortune was we met no bear in so open a country, to grease the way and make it slip down. In the night our sentinel alarmed us with an idle suspicion that he heard the Indian whistle, (which amongst them is a signal for attacking their enemies.) This made every one stand manfully to his arms in a moment, and I found no body more undismayed in this surprise than Mr. Banister; but after we had put ourselves in battle array, we discovered this whistle to be nothing but the nocturnal note of a little harmless bird, that inhabits those woods. We were glad to find the mistake, and commending the sentinel for his great vigilance, composed our noble spirits again to rest till the morning. However, some of the company dreamed of nothing but scalping all the rest of the night.

28th. We snapped up our breakfast as fast as we could, that we might have the more leisure to pick our way over a very bad ford across the river. Though, bad as it was, we all got safe on the other side. We were no sooner landed, but we found ourselves like to encounter a very rough and almost impassable thicket. However, we scuffled through it without any dismay or complaint. This was a copse of young saplings, consisting of oak, hickory and sassafras, which are the growth of a fertile soil. We gained no more than two miles in three hours in this perplexed place, and after that had the pleasure to issue out into opener woods. The land was generally good, though pretty bare of timber, and particularly we traversed a rich level of at least two miles. Our whole day's journey amounted not quite to five miles, by reason we had been so hampered at our first setting out. We were glad to take up our quarters early in a piece of fine low-grounds, lying about a mile north of the river. Thus we perceived the river edged away gently towards the south, and never likely to come in the way of our course again. Nevertheless, the last time we saw it, it kept much the same breadth and depth that it had where it divided its waters from the Staunton, and in all likelihood holds its own quite as high as the mountains.

29th. In measuring a mile and a half farther we reached the lower ford of the Irvin, which branches from the Dan about two miles to the south, south-east of this place. This river was very near threescore yards over, and in many places pretty deep. From thence, in little more than a mile, we came to the end of this course, being in length fifteen miles and eighty-eight poles. And so far the land held reasonably good; but when we came to run our northern course of three miles, to the place where the country line intersects the same Irvin higher up, we passed over nothing but stony hills,

and barren grounds, clothed with little timber, and refreshed with less water. All my hopes were in the riches that might lie under ground, there being many goodly tokens of mines. The stones which paved the river, both by their weight and colour, promised abundance of metal; but whether it be silver, lead or copper, is beyond our skill to discern. We also discovered many shows of marble, of a white ground, with streaks of red and purple. So that it is possible the treasure in the bowels of the earth may make ample amends for the poverty of its surface. We encamped on the bank of this river, a little below the dividing line, and near the lower end of an island half a mile long, which, for the metallic appearances, we dignified with the name of Potosi. In our way to this place we treed a bear, of so mighty a bulk, that when we fetched her down she almost made an earthquake. But neither the shot nor the fall disabled her so much, but she had like to have hugged one of our dogs to death in the violence of her embrace. We exercised the discipline of the woods, by tossing a very careless servant in a blanket, for losing one of our axes.

30th. This being Sunday, we were glad to rest from our labours; and, to help restore our vigour, several of us plunged into the river, notwithstanding it was a frosty morning. One of our Indians went in along with us, and taught us their way of swimming. They strike not out both hands together, but alternately one after another, whereby they are able to swim both farther and faster than we do. Near the camp grew several large chestnut trees very full of chestnuts. Our men were too lazy to climb the trees for the sake of the fruit, but, like the Indians, chose rather to cut them down, regardless of those that were to come after. Nor did they esteem such kind of work any breach of the sabbath, so long as it helped to fill their bellies. One of the Indians shot a bear, which he lugged about half a mile for the good of the company. These gentiles have no distinction of days, but make every day a sabbath, except when they go out to war or a hunting, and then they will undergo incredible fatigues. Cf other work the men do none, thinking it below the dignity of their sex, but make the poor women do all the drudgery. They have a blind tradition amongst them, that work was first laid upon mankind by the fault of a female, and therefore it is but just that sex should do the greatest part of it. This they plead in their excuse; but the true reason is, that the weakest must always go to the wall, and superiority has from the beginning ungenerously imposed slavery on those who are not able to resist it.

October 1. I plunged once more into the river Irvin this morning, for a small cold I had caught, and was entirely cured by it. We ran the three mile course from a white oak standing on my corner upon the western bank of the river, and intersected the place, where we ended the back line exactly, and fixed that corner at a hickory. We steered south from thence about a mile, and then came upon the Dan, which thereabouts makes but narrow low-grounds. We forded it about a mile and a half to the westward of the place where the Irvin runs into it. When we were over, we determined to ride down the river on that side, and for three miles found the high-land come close down to it, pretty barren and uneven. But then on a sudden the scene changed, and we were surprised with an opening of large extent, where the Sauro Indians once lived, who had been a considerable nation. But the frequent inroads of the Senecas annoyed them incessantly, and obliged them to remove from this fine situation about thirty years ago. They then retired more southerly, as far as Pee Dee river, and incorporated with the Kewawees, where a remnant of them is still surviving. It must have been a great misfortune to them to be obliged to abandon so beautiful a dwelling, where the air is wholesome, and the soil equal in fertility to any in

the world. The river is about eighty yards wide, always confined within its lofty banks, and rolling down its waters, as sweet as milk, and as clear as crystal. There runs a charming level, of more than a mile square, that will bring forth like the lands of Egypt, without being overflowed once a year. There is scarce a shrub in view to intercept your prospect, but grass as high as a man on horseback. Towards the woods there is a gentle ascent, till your sight is intercepted by an eminence, that overlooks the whole landscape. This sweet place is bounded to the east by a fine stream, called Sauro creek, which running out of the Dan, and tending westerly, makes the whole a peninsula. I could not quit this pleasant situation without regret, but often faced about to take a parting look at it as far as I could see, and so indeed did all the rest of the company. But at last we left it quite out of sight, and continued our course down the river, till where it intersects my back line, which was about five miles below Sauro town. We took up our quarters at the same camp where we had a little before been alarmed with the supposed Indian whistle, which we could hardly get out of our heads. However, it did not spoil our rest; but we dreamed all night of the delights of Tempe and the Elysian fields.

2d. We awoke early from these innocent dreams, and took our way along my back line till we came to the corner of it. From thence we slanted to the country line, and kept down that as far as the next fording place of the river, making in the whole eighteen miles. We breathed all the way in pure air, which seemed friendly to the lungs, and circulated the blood and spirits very briskly. Happy will be the people destined for so wholesome a situation, where they may live to fulness of days, and which is much better still, with much content and gaiety of heart. On every rising ground we faced about to take our leave of the mountains, which still showed their towering heads. The ground was uneven, rising into hills, and sinking into valleys great part of the way, but the soil was good, abounding in most places with a greasy black mould. We took up our quarters on the western bank of the river, where we had forded it at our coming up. One of our men, Joseph Colson by name, a timorous, lazy fellow, had squandered away his bread, and grew very uneasy when his own ravening had reduced him to short allowance. He was one of those drones who love to do little and eat much, and are never in humour unless their bellies are full. According to this wrong turn of constitution, when he found he could no longer revel in plenty, he began to break the rules by complaining and threatening to desert. This had like to have brought him to the blanket, but his submission reprieved him. Though bread grew a little scanty with us, we had venison in abundance, which a true woodsman can eat contentedly without any bread at all. But bears' flesh needs something of the farinaceous, to make it pass easily off the stomach. In the night we heard a dog bark at some distance, as we thought, when we saw all our own dogs lying about the fire. This was another alarm; but we soon discovered it to be a wolf, which will sometimes bark very like a dog, but something shriller.

3d. The fine season continuing, we made the most of it by leaving our quarters as soon as possible. We began to measure and mark the bounds of major Mayo's land on the south of the country line. In order to do this we marched round the bent of the river, but he being obliged to make a traverse, we could reach no farther than four miles. In the distance of about a mile from where we lay, we crossed Cliff creek, which confined its stream within such high banks that it was difficult to find a passage over. We kept close to the river, and two miles farther came to Hixe's creek, where abundance of canes lay dry and prostrate on the ground, having suffered in the late septennial slaughter of that vegetable. A mile after that we forded



another stream, which we called Hatcher's creek, from two Indian traders of that name, who used formerly to carry goods to the Sauro Indians. Near the banks of this creek I found a large beech tree, with the following inscription cut upon the bark of it, "J. H., H. H., B. B., lay here the 24th of May, 1673." It was not difficult to fill up these initials with the following names, Joseph Hatcher, Henry Hatcher and Benjamin Bullington, three Indian traders, who had lodged near that place sixty years before, in their way to the Sauro town. But the strangest part of the story was this, that these letters, cut in the bark, should remain perfectly legible so long. Nay, if no accident befalls the tree, which appears to be still in a flourishing condition, I doubt not but this piece of antiquity may be read many years hence. We may also learn from it, that the beech is a very long-lived tree, of which there are many exceedingly large in these woods. The major took in a pretty deal of rich low-ground into his survey, but unhappily left a greater quantity out, which proves the weakness of making entries by guess. We found the Dan fordable hereabouts in most places. One of the Indians shot a wild goose, that was very lousy, which nevertheless was good meat, and proved those contemptible tasters to be no bad tasters. However, for those stomachs that were so unhappy as to be squeamish, there was plenty of fat bear, we having killed two in this day's march.

4th. I caused the men to use double diligence to assist major Mayo in fixing the bounds of his land, because he had taken a great deal of pains about mine. We therefore mounted our horses as soon as we had swallowed our breakfast. Till that is duly performed a woodsman makes a conscience of exposing himself to any fatigue. We proceeded then in his survey, and made an end before night, though most of the company were of opinion the land was hardly worth the trouble. It seemed most of it before below the character the discoverers had given him of it. We fixed his eastern corner on Cocquade creek, and then continued our march, over the hills and far away, along the country line two miles farther. Nor had we stopped there, unless a likelihood of rain had obliged us to encamp on an eminence where we were in no danger of being overflowed. Peter Jones had a smart fit of an ague, which shook him severely, though he bore it like a man; but the small major had a small fever, and bore it like a child. He groaned as if he had been in labour, and thought verily it would be his fate to die like a mutinous Israelite in the wilderness, and be buried under a heap of stones. The rain was so kind as to give us leisure to secure ourselves against it, but came however time enough to interrupt our cookery, so that we supped as temperately as so many philosophers, and kept ourselves snug within our tents. The worst part of the story was, that the sentinels could hardly keep our fires from being extinguished by the heaviness of the shower.

5th. Our invalids found themselves in travelling condition this morning, and began to conceive hopes of returning home and dying in their own beds. We pursued our journey through uneven and perplexed woods, and in the thickest of them had the fortune to knock down a young buffalo, two years old. Providence threw this vast animal in our way very seasonably, just as our provisions began to fail us. And it was the more welcome too, because it was change of diet, which of all varieties, next to that of bed-fellows, is the most loathed and eatable. We had lived upon venison and bear until our stomachs ~~loathed~~ <sup>loathed</sup> them almost as much as the Hebrews of old did their quails. Our butchers were so unhandy at their business that we grew very lank before we could get our dinner. But when it came, we found it equal in goodness to the best beef. They made it the longer because they kept sucking the water out of the guts, in imitation of the Catawba Indians, upon the belief that it is a great cordial, and will even make them drunk, or at

least very gay. We encamped upon Hico river, pretty high up, and had much ado to get our house in order, before a heavy shower descended upon us. I was in pain lest our sick men might suffer by the rain, but might have spared myself the concern, because it had the effect of a cold bath upon them, and drove away their distemper, or rather changed it into a canine appetite, that devoured all before it. It rained smartly all night long, which made our situation on the low-ground more fit for otters than men.

6th. We had abundance of drying work this morning after the clouds broke away and showed the sun to the happy earth. It was impossible for us to strike the tents till the afternoon, and then we took our departure, and made an easy march of four miles to another branch of Hico river, which we called Jesuit's creek, because it misled us. We lugged as many of the dainty pieces of the buffalo along with us as our poor horses could carry, envying the wolves the pleasure of such luxurious diet. Our quarters were taken upon a delightful eminence, that scornfully overlooked the creek, and afforded us a dry habitation. We made our supper on the tongue and udder of the buffalo, which were so good, that a cardinal legate might have made a comfortable meal upon them during the carnival. Nor was this all, but we had still a rarer morsel, the bunch rising up between the shoulders of this animal, which is very tender and very fat. The primings of a young doe, which one of the men brought to the camp, were slighted amidst these dainties, nor would even our servants be fobbed off with cates so common. The low-grounds of this creek are wide in many places, and rich, but seem to lie within reach of every inundation; and this is commonly the case with most low-grounds, that lie either on the rivers or on the creeks that run into them. So great an inconvenience lessens their value very much, and makes high-land, that is just tolerable, of greater advantage to the owner. There he will be more likely to reap the fruits of his industry every year, and not run the risk, after all his toil, to see the sweat of his brow carried down the stream, and perhaps many of his cattle drowned into the bargain. Perhaps in times to come people may bank their low-grounds as they do in Europe, to confine the water within its natural bounds to prevent these inconveniences.

7th. The scarcity of bread, joined to the impatience of some of our company, laid us under a kind of necessity to hasten our return home. For that reason we thought we might be excused for making a sabbath day's journey of about five miles, as far as our old camp upon Sugar Tree creek. On our way we forded Buffalo creek, which also empties its waters into Hico river. The woods we rode through were open, and the soil very promising, great part thereof being low-grounds, full of tall and large trees. A she bear had the ill luck to cross our way, which was large enough to afford us several luxurious meals. I paid for violating the sabbath by losing a pair of gold buttons. I pitched my tent on the very spot I had done when we ran the dividing line between Virginia and Carolina. The beech whose bark recorded the names of the Carolina commissioners was still standing, and we did them the justice to add to their names a sketch of their characters. We got our house in order time enough to walk about and make some slight observations. There were sugar trees innumerable growing in the low-grounds of this creek, from which it received its name. They were many of them as tall as large hickories, with trunks from fifteen to twenty inches through. The woodpeckers, for the pleasure of the sweet juice which these trees yield, pierce the bark in many places, and do great damage, though the trees live a great while under all these wounds. There grows an infinite quantity of maidenhair, which seems to delight most in rich grounds. The sorrel tree is frequent there, whose leaves, brewed in beer, are good in dropsies, green-sickness, and cachexies. We also saw in this place abundance

of papaw trees, the wood whereof the Indians make very dry on purpose to rub fire out of it. Their method of doing it is this: they hold one of these dry sticks in each hand, and by rubbing them hard and quick together, rarify the air in such a manner as to fetch fire in ten minutes. Whenever they offer any sacrifice to their God, they look upon it as a profanation to make use of fire already kindled, but produce fresh virgin fire for that purpose, by rubbing two of these sticks together that never had been used before on any occasion.

8th. After fortifying ourself with a bear breakfast, major Mayo took what help he thought necessary, and began to survey the land, with which the commissioners of Carolina had presented him upon this creek. After running the bounds, the major was a little disappointed in the goodness of the land, but as it had cost him nothing it could be no bad pennyworth, as his upper tract really was. While that business was carrying on, I took my old friend and fellow traveller, Tom Wilson, and went to view the land I had entered for upon this creek, on the north of the country line. We rode down the stream about six miles, crossing it sundry times, and found very wide low grounds on both sides of it, only we observed, wherever the low-grounds were broad on one side the creek, they were narrow on the other. The highlands we were obliged to pass over were very good, and in some places descended so gradually to the edge of the low-grounds, that they formed very agreeable prospects and pleasant situations for building. About four miles from the line, Sugar Tree creek emptied itself into the Hico, which with that addition swelled into a fine river. In this space we saw the most, and most promising good land we had met with in all our travels. In our way we shot a doe, but she not falling immediately, we had lost our game had not the ravens, by their croaking, conducted us to the thicket where she fell. We plunged the carcass of the deer into the water, to secure it from these ominous birds till we returned, but an hour afterwards were surprised with the sight of a wolf which had been fishing for it, and devoured one side. We knocked down an ancient she bear that had no flesh upon her bones, so we left it to the free-booters of the forest. In coming back to the camp we discovered a solitary bull buffalo, which boldly stood his ground, contrary to the custom of that shy animal, we spared his life, from a principle of never slaughtering an innocent creature to no purpose. However, we made ourselves some diversion, by trying if he would face our dogs. He was so far from retreating at their approach, that he ran at them with great fierceness, cocking up his ridiculous little tail, and grunting like a hog. The dogs in the mean time only played about him, not venturing within reach of his horns, and by their nimbleness came off with a whole skin. All these adventures we related at our return to the camp, and what was more to the purpose, we carried to them the side of venison which the wolf had vouchsafed to leave us. After we had composed ourselves to rest, our horses ran up to our camp as fast as their hobbles would let them. This was to some of us a certain argument that Indians were near, whose scent the horses can no more endure than they can their figures; though it was more likely they had been scared by a panther or some other wild beast, the glaring of whose eyes are very terrifying to them in a dark night.

9th. Major Mayo's survey being no more than half done, we were obliged to amuse ourselves another day in this place. And that the time might not be quite lost, we put our garments and baggage into good repair. I for my part never spent a day so well during the whole voyage. I had an impertinent tooth in my upper jaw, that had been loose for some time, and made me chew with great caution. Particularly I could not grind a biscuit but with much deliberation and presence of mind. Tooth-drawers we had none

amongst us, nor any of the instruments they make use of. However, invention supplied this want very happily, and I contrived to get rid of this troublesome companion by cutting a caper. I caused a twine to be fastened round the root of my tooth, about a fathom in length, and then tied the other end to the snag of a log that lay upon the ground, in such a manner that I could just stand upright. Having adjusted my string in this manner, I bent my knees enough to enable me to spring vigorously off the ground, as perpendicularly as I could. The force of the leap drew out the tooth with so much ease that I felt nothing of it, nor should have believed it was come away, unless I had seen it dangling at the end of the string. An under tooth may be fetched out by standing off the ground and fastening your string at due distance above you. And having so fixed your gear, jump off your standing, and the weight of your body, added to the force of the spring, will prize out your tooth with less pain than any operator upon earth could draw it. This new way of tooth-drawing, being so silently and deliberately performed, both surprised and delighted all that were present, who could not guess what I was going about. I immediately found the benefit of getting rid of this troublesome companion, by eating my supper with more comfort than I had done during the whole expedition.

10th. In the morning we made an end of our bread, and all the rest of our provision, so that now we began to travel pretty light. All the company were witnesses how good the land was upon Sugar Tree creek, because we rode down it four miles, till it fell into Hico river. Then we directed our course over the highland, thinking to shorten our way to Tom Wilson's quarter. Nevertheless, it was our fortune to fall upon the Hico again, and then kept within sight of it several miles together, till we came near the mouth. Its banks were high and full of precipices on the east side, but it afforded some low-grounds on the west. Within two miles of the mouth are good shows of copper mines, as Harry Morris told me, but we saw nothing of them. It runs into the Dan just below a large fall, but the chain of rocks does not reach quite across the river, to intercept the navigation. About a mile below lives Aaron Pinston, at a quarter belonging to Thomas Wilson, upon Tewahominy creek. This man is the highest inhabitant on the south side of the Dan, and yet reckons himself perfectly safe from danger. And if the bears, wolves, and panthers were as harmless as the Indians, his stock might be so too. Tom Wilson offered to knock down a steer for us, but I would by no means accept of his generosity. However, we were glad of a few of his peas and potatoes, and some rashers of his bacon, upon which we made good cheer. This plantation lies about a mile from the mouth of Tewahominy, and about the same distance from the mouth of Hico river, and contains a good piece of land. The edifice was only a log house, affording a very free passage for the air through every part of it, nor was the cleanliness of it any temptation to lie out of our tents, so we encamped once more, for the last time, in the open field.

11th. I tipped our landlady with what I imagined a full reward for the trouble we had given her, and then mounted our horses, which pricked up their ears after the two meals they had eaten of corn. In the distance of about a mile we reached the Dan, which we forded with some difficulty into the fork. The water was pretty high in the river, and the current something rapid, nevertheless all the company got over safe, with only a little water in their boots. After traversing the fork, which was there at least two good miles across, we forded the Staunton into a little island, and then the narrow branch of the same to the main land. We took major Mumford's tenant in our way, where we moistened our throats with a little milk, and then proceeded in good order to Blue Stone Castle. My landlady received

us with a grim sort of a welcome, which I did not expect, since I brought her husband back in good health, though perhaps that might be the reason. It is sure something or other did tease her, and she was a female of too strong passions to know how to dissemble. However, she was so civil as to get us a good dinner, which I was the better pleased with because Col. Cock and Mr. Mumford came time enough to partake of it. The colonel had been surveying land in these parts, and particularly that on which Mr. Stith's copper mine lies, as likewise a tract on which Cornelius Cargill has fine appearances. He had but a poor opinion of Mr. Stith's mine, foretelling it would be all labour in vain, but thought something better of Mr. Cargill's. After dinner these gentlemen took their leaves, and at the same time I discharged two of my fellow travellers, Thomas Wilson and Joseph Colson, after having made their hearts merry, and giving each of them a piece of gold to rub their eyes with. We now returned to that evil custom of lying in a house, and an evil one it is, when ten or a dozen people are forced to pig together in a room, as we did, and were troubled with the squalling of peevish, dirty children into the bargain.

12th. We ate our fill of potatoes and milk, which seems delicious fare to those who have made a campaign in the woods. I then took my first minister, Harry Morris, up the hill, and marked out the place where Blue Stone Castle was to stand, and overlook the adjacent country. After that I put my friend in mind of many things he had done amiss, which he promised faithfully to reform. I was so much an infidel to his fair speeches, (having been many times deceived by them,) that I was forced to threaten him with my highest displeasure, unless he mended his conduct very much. I also let him know, that he was not only to correct his own errors, but likewise those of his wife, since the power certainly belonged to him, in virtue of his conjugal authority. He scratched his head at this last admonition, from whence I inferred that the gray mare was the better horse. We gave our heavy baggage two hours' start, and about noon followed them, and in twelve miles reached John Butcher's, calling by the way for master Mumford, in order to take him along with us. Mr. Butcher received us kindly, and we had a true Roanoke entertainment of pork upon pork, and pork again upon that. He told us he had been one of the first seated in that remote part of the country, and in the beginning had been forced, like the great Nebuchadnezzar, to live a considerable time upon grass. This honest man set a mighty value on the mine he fancied he had in his pasture, and showed us some of the ore, which he was made to believe was a gray copper, and would certainly make his fortune. But there is a bad distemper rages in those parts, that grows very epidemical. The people are all mine mad, and neglecting to make corn, starve their families in hopes to live in great plenty hereafter. Mr. Stith was the first that was seized with the frenzy, and has spread the contagion far and near. As you ride along the woods, you see all the large stones knocked to pieces, nor can a poor marcasite rest quietly in its bed for these curious inquirers. Our conversation ran altogether upon this darling subject, until the hour came for our lying in bulk together.

13th. After breaking our fast with a sea of milk and potatoes, we took our leave, and I crossed my landlady's hand with a piece of money. She refused the offer at first, but, like a true woman, accepted of it when it was put home to her. She told me the utmost she was able to do for me was a trifle in comparison of some favour I had formerly done her; but what that favour was, neither I could recollect, nor did she think proper to explain. Though it threatened rain, we proceeded on our journey, and jogged on in the new road for twenty miles, that is as far as it was cleared at that time, and found it would soon come to be a very good one after it was well

grubbed. About nine miles from John Butcher's, we crossed Allen's creek, four miles above Mr. Stith's mine. Near the mouth of this creek is a good body of rich land, whereof Occaneeche neck is a part. It was entered for many years ago by Col. Harrison and Col. Allen, but to this day is held without patent or improvement. And they say Mr. Bolling does the same, with a thousand acres lying below John Butcher's. After beating the new road for twenty miles, we struck off towards Meherrin, which we reached in eight miles farther, and then came to the plantation of Joshua Nicholson, where Daniel Taylor lives for halves. There was a poor dirty house, with hardly any thing in it but children, that wallowed about like so many pigs. It is a common case in this part of the country, that people live worse upon good land; and the more they are befriended by the soil and the climate, the less they will do for themselves. This man was an instance of it, for though his plantation would make plentiful returns for a little industry, yet he wanting that, wanted every thing. The woman did all that was done in the family, and the few garments they had to cover their dirty hides were owing to her industry. We could have no supplies from such neighbours as these, but depended on our own knapsacks, in which we had some remnants of cold fowls that we brought from Blue Stone Castle. When my house was in order, the whole family came and admired it, as much as if it had been the grand vizier's tent in the Turkish army.

14th. The sabbath was now come round again, and although our horses would have been glad to take the benefit of it, yet we determined to make a Sunday's journey to Brunswick church, which lay about eight miles off. Though our landlord could do little for us, nevertheless, we did him all the good we were able, by bleeding his sick negro, and giving him a dose of Indian physic. We got to church in decent time, and Mr. Betty, the parson of the parish, entertained us with a good honest sermon, but whether he bought it, or borrowed it, would have been uncivil in us to inquire. Be that as it will, he is a decent man, with a double chin that sits gracefully over his band, and his parish, especially the female part of it, like him well. We were not crowded at church, though it was a new thing in that remote part of the country. What women happened to be there, were very gim and tidy in the work of their own hands, which made them look tempting in the eyes of us foresters. When church was done, we refreshed our teacher with a glass of wine, and then receiving his blessing, took horse and directed our course to major Embry's. The distance thither was reputed fifteen miles, but appeared less by the company of a nymph of those woods, whom innocence, and wholesome flesh and blood made very alluring. In our way we crossed Sturgeon creek and Queocky creek, but at our journey's end were so unlucky as not to find either master or mistress at home. However, after two hours of hungry expectation, the good woman luckily found her way home, and provided very hospitably for us. As for the major, he had profited so much by my prescription, as to make a journey to Williamsburg, which required pretty good health, the distance being little short of one hundred miles.

15th. After our bounteous landlady had cherished us with roast beef and chicken-pie, we thankfully took leave. At the same time we separated from our good friend and fellow traveller, major Mayo, who steered directly home. He is certainly a very useful, as well as an agreeable companion in the woods, being ever cheerful and good-humoured, under all the little crosses, disasters, and disappointments of that rambling life. As many of us as remained jogged on together to Sapponi chapel, where I thanked major Mumford and Peter Jones for the trouble that they had taken in this long journey. That ceremony being duly performed, I filed off with my honest friend, Mr. Banister, to his habitation on Hatcher's run, which lay about fourteen miles

from the chapel above-mentioned. His good-humoured little wife was glad to see her runaway spouse returned in safety, and treated us kindly. It was no small pleasure to me, that my worthy friend found his family in good health, and his affairs in good order. He came into this ramble so frankly, that I should have been sorry if he had been a sufferer by it. In the gaiety of our hearts we drank our bottle a little too freely, which had an unusual effect on persons so long accustomed to simple element. We were both of us raised out of our beds in the same manner, and near the same time, which was a fair proof that people who breath the same air, and are engaged in the same way of living, will be very apt to fall into the same indispositions. And this may explain why distempers sometimes go round a family, without any reason to believe they are infectious, according to the superstition of the vulgar.

16th. After pouring down a basin of chocolate, I wished peace to that house, and departed. As long as Mr. Banister had been absent from his family, he was yet so kind as to conduct me to major Mumford's, and which was more, his wife very obligingly consented to it. The major seemed overjoyed at his being returned safe and sound from the perils of the woods, though his satisfaction had some check from the change his pretty wife had suffered in her complexion. The vermilion of her cheeks had given place a little to the saffron, by means of a small tincture of the yellow jaundice. I was sorry to see so fair a flower thus faded, and recommended the best remedy I could think of. After a refreshment of about an hour, we went on to Col. Bolling's, who was so gracious as to send us an invitation. As much in haste as I was to return to my family, I spent an hour or two at that place, but could by no means be persuaded to stay dinner, nor could even madam de Graffenriedt's smiles on one side of her face shake my resolution. From thence we proceeded to Col. Mumford's, who seemed to have taken a new lease, were any dependence to be upon looks, or any indulgence allowed to the wishes of his friends. An honester a man, a fairer trader, or a kinder friend, this country never produced: God send any of his sons may have the grace to take after him. We took a running repast with this good man, and then bidding adieu both to him and Mr. Banister, I mounted once more, and obstinately pursued my journey home, though the clouds threatened, and the heavens looked very lowering. I had not passed the court-house before it began to pour down like a spout upon me. Nevertheless, I pushed forward with vigour, and got dripping wet before I could reach Merchant's Hope Point. My boat was there luckily waiting for me, and wafted me safe over. And the joy of meeting my family in health made me in a moment forget all the fatigues of the journey, as much as if I had been husquenawed. However, the good Providence that attended me, and my whole company, will I hope stick fast in my memory, and make me everlastingly thankful.

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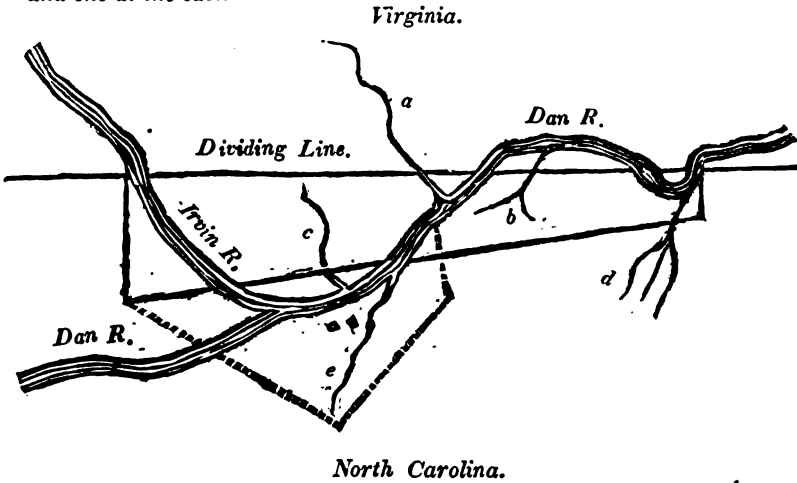
*A list of our Company of all sorts.*

Myself,  
Major Mayo,  
Major Mumford,  
Mr. Banister,  
Mr. Jones,

Thomas Wilson,  
Joseph Colson,  
Harry Morris,  
Robert Bolling,  
Thomas Hooper,

Lawson,  
Three Indians,  
Three negroes,  
Twenty horses,  
Four dogs,

*My plat of twenty thousand acres in North Carolina. Surveyed in September, 1733, by Mr. Mayo, being fifteen miles long, three broad at the west end, and one at the east.*



- a. Cascade creek.    b. Lowland creek.    c. Kishan branch.    d. Sable creek.  
e. Sauro creek.    ° Sauro town.

*An account of the distances of places.*

From Westover to Col. Mumford's,	- - - - -	16 miles.
From Col. Mumford's to major Mumford's,	- - - - -	6
From thence to Sapponi chapel,	- - - - -	20
From thence to major Embry's on Nottoway,	- - - - -	10
From thence to Brunswick court-house,	- - - - -	15
From thence to Meherrin river,	- - - - -	8
From thence to the ford on Roanoke,	- - - - -	12
From thence to Col. Stith's copper mine,	- - - - -	20
From thence to Butcher's creek,	- - - - -	6
From thence to Blue Stone Castle,	- - - - -	12
From thence to the ford into the fork,	- - - - -	7
From thence to Birche's creek,	- - - - -	5
From thence to Banister river,	- - - - -	6
From thence to Morris creek,	- - - - -	3
From thence to the Medway,	- - - - -	14
From thence to Maostie creek,	- - - - -	2
From hence to Fork creek,	- - - - -	6
From hence to Peter's creek,	- - - - -	2
From hence to Jones' creek,	- - - - -	2
From hence to the first ford over the Dan,	- - - - -	1½
From hence to Cane creek,	- - - - -	2½
From hence to the second ford of the Dan,	- - - - -	4½
From hence to the mouth of Sable creek,	- - - - -	8
From hence to the south-east corner of my land,	- - - - -	1
From thence to the Dan on my back line,	- - - - -	8
From thence to the Irvin on my back line,	- - - - -	6



From thence to my south-west corner, - - - -	1 mile.
From thence to my corner on the west of the Irvin, - - - -	3
From thence to the Dan along my upper-line, - - - -	4½
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From thence to the mouth of the Irvin, - - - -	1½
From thence to Sauro creek, - - - -	2½
From thence to where my back-line crosses the Dan, - - - -	5
From thence to my south-east corner, - - - -	8
From thence to Cliff creek, - - - -	10
From thence to Hixe's creek, - - - -	2
From thence to Hatcher's creek, - - - -	1
From thence to Cocquade creek, - - - -	5
From thence to the upper ford of Hico river, - - - -	7
From thence to Jesuit's creek, - - - -	4
From thence to where the line cuts Sugar Tree creek, - - - -	5
From thence to the mouth of Sugar Tree creek, - - - -	4
From thence to the mouth of Hico river, - - - -	7
From thence to Wilson's quarter on Tewahominy creek, - - - -	1
From thence to the Dan, - - - -	1
From thence across the fork to the Staunton, - - - -	2
From thence to Blue Stone Castle, - - - -	7
From thence to Sandy creek, - - - -	5
From thence to Mr. Mumford's plantation, - - - -	2
From thence to Butcher's creek, - - - -	5
From thence to Allen's creek, - - - -	9
From thence to Joshua Nicholson's on Meherrin, - - - -	18
From thence to Brunswick court-house, - - - -	8
From thence to Nottoway bridge, - - - -	14
From thence to Sapponi Chapel, - - - -	10
From thence to Mr. Banister's on Hatcher's run, - - - -	12
From thence to Col. Bolling's plantation, - - - -	9
From thence to Col. Mumford's plantation, - - - -	5
From thence to Westover, - - - -	16

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# PROGRESS TO THE MINES,

IN THE YEAR 1732.

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September 18th. For the pleasure of the good company of Mrs. Byrd, and her little governor, my son, I went about half way to the falls in the chariot. There we halted, not far from a purling stream, and upon the stump of a propagate oak picked the bones of a piece of roast beef. By the spirit which that gave me, I was the better able to part with the dear companions of my travels, and to perform the rest of my journey on horseback by myself. I reached Shacco's before two o'clock, and crossed the river to the mills. I had the grief to find them both stand as still, for the want of water, as a dead woman's tongue, for want of breath. It had rained so little for many weeks above the falls, that the Naiades had hardly water enough left to wash their faces. However, as we ought to turn all our misfortunes to the best advantage, I directed Mr. Booker, my first minister there, to make use of the lowness of the water for blowing up the rocks at the mouth of the canal. For that purpose I ordered iron drills to be made about two feet long, pointed with steel, chisel fashion, in order to make holes, into which we put our cartridges of powder, containing each about three ounces. There wanted skill among my engineers to choose the best parts of the stone for boring, that we might blow to the most advantage. They made all their holes quite perpendicular, whereas they should have humoured the grain of the stone for the more effectual execution. I ordered the points of the drills to be made chisel way, rather than the diamond, that they might need to be seldomer repaired, though in stone the diamond points would make the most despatch. The water now flowed out of the river so slowly, that the miller was obliged to pond it up in the canal, by setting open the flood-gates at the mouth, and shutting those close at the mill. By this contrivance, he was able at any time to grind two or three bushels, either for his choice customers, or for the use of my plantations. Then I walked to the place where they broke the flax, which is wrought with much greater ease than the hemp, and is much better for spinning. From thence I paid a visit to the weaver, who needed a little of Minerva's inspiration to make the most of a piece of cloth. Then I looked in upon my Caledonian spinster, who was mended more in her looks than in her humour. However, she promised much, though at the same time intended to perform little. She is too high-spirited for Mr. Booker, who hates to have his sweet temper ruffled, and will rather suffer matters to go a little wrong sometimes, than give his righteous spirit any uneasiness. He is very honest, and would make an admirable overseer where servants will do as they are bid. But eye-servants, who want abundance of overlooking, are not so proper to be committed to his care. I found myself out of order, and for that reason retired early; yet with all this precaution had a gentle fever in the night, but towards morning nature set open all her gates, and drove it out in a plentiful perspiration.

19th. The worst of this fever, was, that it put me to the necessity of taking another pounce of bark. I moistened every dose with a little brandy, and filled the glass up with water, which is the least nauseous way of taking this popish medicine, and besides hinders it from purging. After I had swallowed a few poached eggs, we rode down to the mouth of the canal, and from thence crossed over to the broad rock island in a canoe. Our errand was to view some iron ore, which we dug up in two places. That on the surface seemed very spongy and poor, which gave us no great encouragement to search deeper, nor did the quantity appear to be very great. However, for my greater satisfaction, I ordered a hand to dig there for some time this winter. We walked from one end of the island to the other, being about half a mile in length, and found the soil very good, and too high for any flood, less than that of Deucalion, to do the least damage. There is a very wild prospect both upward and downward, the river being full of rocks, over which the stream tumbled with a murmur, loud enough to drown the notes of a scolding wife. This island would make an agreeable hermitage for any good Christian, who had a mind to retire from the world. Mr. Booker told me how Dr. Ireton had cured him once of a looseness, which had been upon him two whole years. He ordered him a dose of rhubarb, with directions to take twenty-five drops of laudanum so soon as he had had two physical stools. Then he rested one day, and the next he ordered him another dose of the same quantity of laudanum to be taken, also after the second stool. When this was done, he finished the cure by giving him twenty drops of laudanum every night for five nights running. The doctor insisted upon the necessity of stopping the operation of the rhubarb before it worked quite off, that what remained behind might strengthen the bowels. I was punctual in swallowing my bark; and that I might use exercise upon it, rode to Prince's Folly, and my Lord's islands, where I saw very fine corn. In the mean time Vulcan came in order to make the drills for boring the rocks, and gave me his parole he would, by the grace of God, attend the works till they were finished, which he performed as lamely as if he had been to labour for a dead horse, and not for ready money. I made a North Carolina dinner upon fresh pork, though we had a plate of green peas after it, by way of desert, for the safety of our noses. Then my first minister and I had some serious conversation about my affairs, and I find nothing disturbed his peaceable spirit so much as the misbehavior of the spinster above-mentioned. I told him I could not pity a man, who had it always in his power to do himself and her justice, and would not. If she were a drunkard, a scold, a thief, or a slanderer, we had wholesome laws, that would make her back smart for the diversion of her other members, and it was his fault he had not put those wholesome severities in execution. I retired in decent time to my own apartment, and slept very comfortably upon my bark, forgetting all the little crosses arising from overseers and negroes.

20th. I continued the bark, and then tossed down my poached eggs, with as much ease as some good breeders slip children into the world. About nine I left the prudentest orders I could think of with my vizier, and then crossed the river to Shacco's. I made a running visit to three of my quarters, where, besides finding all the people well, I had the pleasure to see better crops than usual both of corn and tobacco. I parted there with my intendant, and pursued my journey to Mr. Randolph's, at Tuckahoe, without meeting with any adventure by the way. Here I found Mrs. Fleming, who was packing up her baggage with design to follow her husband the next day, who was gone to a new settlement in Goochland. Both he and she have been about seven years persuading themselves to remove to that retired part of the country, though they had the two strong arguments of health and interest for so doing.

The widow smiled graciously upon me, and entertained me very handsomely. Here I learned all the tragical story of her daughter's humble marriage with her uncle's overseer. Besides the meanness of this mortal's aspect, the man has not one visible qualification, except impudence, to recommend him to a female's inclinations. But there is sometimes such a charm in that Hibernian endowment, that frail woman cannot withstand it, though it stand alone without any other recommendation. Had she run away with a gentleman or a pretty fellow, there might have been some excuse for her, though he were of inferior fortune: but to stoop to a dirty plebeian, without any kind of merit, is the lowest prostitution. I found the family justly enraged at it; and though I had more good nature than to join in her condemnation, yet I could devise no excuse for so senseless a prank as this young gentlewoman had played. Here good drink was more scarce than good victuals, the family being reduced to the last bottle of wine, which was therefore husbanded very carefully. But the water was excellent. The heir of the family did not come home till late in the evening. He is a pretty young man, but had the misfortune to become his own master too soon. This puts young fellows upon wrong pursuits, before they have sense to judge rightly for themselves. Though at the same time they have a strange conceit of their own sufficiency, when they grow near twenty years old, especially if they happen to have a small smattering of learning. It is then they fancy themselves wiser than all their tutors and governors, which makes them headstrong to all advice, and above all reproof and admonition.

21st. I was sorry in the morning to find myself stopped in my career by bad weather brought upon us by a north-east wind. This drives a world of raw unkindly vapours upon us from Newfoundland, laden with blight, coughs, and pleurisies. However, I complained not, lest I might be suspected to be tired of the good company. Though Mrs. Fleming was not so much upon her guard, but mutinied strongly at the rain, that hindered her from pursuing her dear husband. I said what I could to comfort a gentlewoman under so sad a disappointment. I told her a husband, that stayed so much at home as her's did, could be no such violent rarity, as for a woman to venture her precious health, to go daggling through the rain after him, or to be miserable if she happened to be prevented. That it was prudent for married people to fast sometimes from one another, that they might come together again with the better stomach. That the best things in this world, if constantly used, are apt to be cloying, which a little absence and abstinence would prevent. This was strange doctrine to a fond female, who fancies people should love with as little reason after marriage as before. In the afternoon monsieur Marij, the minister of the parish, came to make me a visit. He had been a Romish priest, but found reasons, either spiritual or temporal, to quit that gay religion. The fault of this new convert is, that he looks for as much respect from his protestant flock, as is paid to the popish clergy, which our ill-bred Hugonots do not understand. Madam Marij, had so much curiosity as to want to come too; but another horse was wanting, and she believed it would have too vulgar an air to ride behind her husband. This woman was of the true exchange breed, full of discourse, but void of discretion, and married a parson, with the idle hopes he might some time or other come to be his grace of Canterbury. The gray mare is the better horse in that family, and the poor man submits to her wild vagaries for peace's sake. She has just enough of the fine lady, to run in debt, and be of no signification in her household. And the only thing that can prevent her from undoing her loving husband will be, that nobody will trust them beyond the sixteen thousand,\* which is soon run out in a Goochland store. The

\* Sixteen thousand pounds of tobacco was the legal salary of a minister.—En.

way of dealing there is, for some small merchant or pedler to buy a Scots pennyworth of goods, and clap one hundred and fifty per cent. upon that. At this rate the parson cannot be paid much more for his preaching than it is worth. No sooner was our visiter retired, but the facetious widow was so kind as to let me into all this secret history, but was at the same time exceedingly sorry that the woman should be so indiscreet, and the man so tame as to be governed by an unprofitable and fantastical wife.

22d. We had another wet day, to try both Mrs. Fleming's patience and my good breeding. The north-east wind commonly sticks by us three or four days, filling the atmosphere with damps, injurious both to man and beast. The worst of it was, we had no good liquor to warm our blood, and fortify our spirits against so strong a malignity. However, I was cheerful under all these misfortunes, and expressed no concern but a decent fear lest my long visit might be troublesome. Since I was like to have thus much leisure, I endeavoured to find out what subject a dull married man could introduce that might best bring the widow to the use of her tongue. At length I discovered she was a notable quack, and therefore paid that regard to her knowledge, as to put some questions to her about the bad distemper that raged then in the country. I mean the bloody flux, that was brought us in the negro-ship consigned to Col. Braxton. She told me she made use of very simple remedies in that case, with very good success. She did the business either with hartshorn drink, that had plantain leaves boiled in it, or else with a strong decoction of St. Andrew's cross, in new milk instead of water. I agreed with her that those remedies might be very good, but would be more effectual after a dose or two of Indian physic. But for fear this conversation might be too grave for a widow, I turned the discourse, and began to talk of plays, and finding her taste lay most towards comedy, I offered my service to read one to her, which she kindly accepted. She produced the second part of the Beggar's Opera, which had diverted the town for forty nights successively, and gained four thousand pounds to the author. This was not owing altogether to the wit or humour that sparkled in it, but to some political reflections, that seemed to hit the ministry. But the great advantage of the author was, that his interest was solicited by the dutchess of Queensbury, which no man could refuse who had but half an eye in his head, or half a guinea in his pocket. Her grace, like death, spared nobody, but even took my lord Selkirk in for two guineas, to repair which extravagance he lived upon Scots herrings two months afterwards. But the best story was, she made a very smart officer in his majesty's guards give her a guinea, who swearing at the same time it was all he had in the world, she sent him fifty for it the next day, to reward his obedience. After having acquainted my company with the history of the play, I read three acts of it, and left Mrs. Fleming and Mr. Randolph to finish it, who read as well as most actors do at a rehearsal. Thus we killed the time, and triumphed over the bad weather.

23d. The clouds continued to drive from the north-east, and to menace us with more rain. But as the lady resolved to venture through it, I thought it a shame for me to venture to flinch. Therefore, after fortifying myself with two capacious dishes of coffee, and making my compliments to the ladies, I mounted, and Mr. Randolph was so kind as to be my guide. At the distance of about three miles, in a path as narrow as that which leads to heaven, but much more dirty, we reached the homely dwelling of the reverend Mr. Marij. His land is much more barren than his wife, and needs all Mr. Bradley's skill in agriculture to make it bring corn. Thence we proceeded five miles farther, to a mill of Mr. Randolph's, that is apt to stand still when there falls but little rain, and to be carried away when there falls a great deal. Then we pursued a very blind path four miles farther, which puz-

led my guide, who I suspect led me out of the way. At length we came into a great road, where he took leave, after giving me some very confused directions, and so left me to blunder out the rest of the journey by myself. I lost myself more than once, but soon recovered the right way again. About three miles after quitting my guide, I passed the south branch of Pamunky river, near fifty yards over, and full of stones. After this, I had eight miles to Mr. Chiswell's, where I arrived about two o'clock, and saved my dinner. I was very handsomely entertained, finding every thing very clean, and very good. I had not seen Mrs. Chiswell in twenty-four years, which, alas! had made great havoc with her pretty face, and ploughed very deep furrows in her fair skin. It was impossible to know her again, so much the flower was faded. However, though she was grown an old woman, yet she was one of those absolute rarities, a very good old woman. I found Mr. Chiswell a sensible, well-bred man, and very frank in communicating his knowledge in the mystery of making iron, wherein he has had long experience. I told him I was come to spy the land, and inform myself of the expense of carrying on an iron work with effect. That I sought my instruction from him, who understood the whole mystery, having gained full experience in every part of it; only I was very sorry he had bought that experience so dear. He answered that he would, with great sincerity, let me into the little knowledge he had, and so we immediately entered upon the business. He assured me the first step I was to take was to acquaint myself fully with the quantity and quality of my ore. For that reason I ought to keep a good pick-axe man at work a whole year to search if there be a sufficient quantity, without which it would be a very rash undertaking. That I should also have a skilful person to try the richness of the ore. Nor is it great advantage to have it exceeding rich, because then it will yield brittle iron, which is not valuable. But the way to have it tough is to mix poor ore and rich together, which makes the poorer sort extremely necessary for the production of the best iron. Then he showed me a sample of the richest ore they have in England, which yields a full moiety of iron. It was of a pale red colour, smooth and greasy, and not exceedingly heavy; but it produced so brittle a metal, that they were obliged to melt a poorer ore along with it. He told me, after I was certain my ore was good and plentiful enough, my next inquiry ought to be, how far it lies from a stream proper to build a furnace upon, and again what distance that furnace will be from water carriage; because the charge of carting a great way is very heavy, and eats out a great part of the profit. That this was the misfortune of the mines of Fredericksville, where they were obliged to cart the ore a mile to the furnace, and after it was run into iron, to carry that twenty-four miles, over an uneven road to Rappahannock river, about a mile below Fredericksburg, to a plantation the company rented of Col. Page. If I were satisfied with the situation, I was in the next place to consider whether I had woodland enough near the furnace to supply it with charcoal, whereof it would require a prodigious quantity. That the properest wood for that purpose was that of oily kind, such as pine, walnut, hickory, oak, and in short all that yields cones, nuts, or acorns. That two miles square of wood, would supply a moderate furnace; so that what you fell first may have time to grow up again to a proper bigness (which must be four inches over) by that time the rest is cut down. He told me farther, that one hundred and twenty slaves, including women, were necessary to carry on all the business of an iron work, and the more Virginians amongst them the better; though in that number he comprehended carters, colliers, and those that planted the corn. That if there should be much carting, it would require one thousand six hundred barrels of corn yearly to support the people, and the cattle employed; nor does even

that quantity suffice at Fredericksville. That if all these circumstances should happily concur, and you could procure honest colliers and firemen, which will be difficult to do, you may easily run eight hundred tons of sow iron a year. The whole charge of freight, custom, commission, and other expenses in England, will not exceed thirty shillings a ton, and it will commonly sell for six pounds, and then the clear profit will amount to four pounds and ten shillings. So that allowing the ten shillings for accidents, you may reasonably expect a clear profit of four pounds, which being multiplied by eight hundred, will amount to three thousand two hundred pounds a year, to pay you for your land and negroes. But then it behooved me to be fully informed of the whole matter myself, to prevent being imposed upon; and if any offered to put tricks upon me, to punish them as they deserve. Thus ended our conversation for this day, and I retired to a very clean lodging in another house, and took my bark, but was forced to take it in water, by reason a light fingered damsel had ransacked my baggage, and drunk up my brandy. This unhappy girl, it seems, is a baronet's daughter; but her complexion, being red-haired, inclined her so much to lewdness, that her father sent her, under the care of the virtuous Mr. Cheep, to seek her fortune on this side the globe.

24th. My friend, Mr. Chiswell, made me reparation for the robbery of his servant, by filling my bottle again with good brandy. It being Sunday, I made a motion for going to church, to see the growth of the parish, but unluckily the sermon happened to be at the chapel, which was too far off. I was unwilling to tire my friend with any farther discourse upon iron, and therefore turned the conversation to other subjects. And talking of management, he let me into two secrets worth remembering. He said the quickest way in the world to stop the fermentation of any liquor was to keep a lighted match of brimstone under the cask for some time. This is useful in so warm a country as this, where cider is apt to work itself off both of its strength and sweetness. The other secret was to keep weevils out of wheat and other grain. You have nothing to do, said he, but to put a bag of pepper into every heap, or cask, which those insects have such an antipathy to that they will not approach it. These receipts he gave me, not upon report, but upon his own repeated experience. He farther told me he had brewed as good ale of malt made of Indian corn as ever he tasted; all the objection was, he could neither by art, or standing, ever bring it to be fine in the cask. The quantity of corn he employed in brewing a cask of forty gallons was two bushels and a half, which made it very strong and pleasant. We had a haunch of venison for dinner, as fat and well tasted as if it had come out of Richmond park. In these upper parts of the country the deer are in better case than below, though I believe the buck which gave us so good a dinner had eaten out his value in peas, which will make deer exceedingly fat. In the afternoon, I walked with my friend to his mill, which is half a mile from his house. It is built upon a rock very firmly, so that it is more apt to suffer by too little water, (the run not being over plentiful,) than too much. On the other side of this stream lie several of Col. Jones' plantations. The poor negroes upon them are a kind of Adamites, very scantily supplied with clothes and other necessities; nevertheless, (which is a little incomprehensible,) they continue in perfect health, and none of them die, except it be of age. However, they are even with their master, and make him but indifferent crops, so that he gets nothing by his injustice, but the scandal of it. And here I must make one remark, which I am a little unwilling to do for fear of encouraging of cruelty, that those negroes which are kept the barest of clothes and bedding are commonly the freest from sickness. And this happens, I suppose, by their being all face, and therefore

better proof against the sudden changes of weather, to which this climate is unhappily subject.

25th. After saying some very civil things to Mrs. Chiswell, for my handsome entertainment, I mounted my horse, and Mr. Chiswell his phaeton, in order to go to the mines at Frederickville. We could converse very little by the way, by reason of our different voitures. The road was very straight and level the whole journey, which was twenty-five miles, the last ten whereof I rode in the chair, and my friend on my horse, to ease ourselves by that variety of motion. About a mile before we got to Frederickville, we forded over the north branch of Pamunky, about sixty yards over. Neither this nor the south branch run up near so high as the mountains, but many miles below them spread out into a kind of morass, like Chickahominy. When we approached the mines, there opened to our view a large space of cleared ground, whose wood had been cut down for coaling. We arrived here about two o'clock, and Mr. Chiswell had been so provident as to bring a cold venison pasty, with which we appeased our appetites, without the impatience of waiting. When our tongues were at leisure for discourse, my friend told me there was one Mr. Harrison, in England, who is so universal a dealer in all sorts of iron, that he could govern the market just as he pleased. That it was by his artful management that our iron from the plantations sold for less than that made in England, though it was generally reckoned much better. That ours would hardly fetch six pounds a ton, when their's fetched seven or eight, purely to serve that man's interest. Then he explained the several charges upon our sow iron, after it was put on board the ships. That in the first place it paid seven shillings and sixpence a ton for freight, being just so much clear gain to the ships, which carry it as ballast, or wedge it in among the hogsheads. When it gets home, it pays three shillings and ninepence custom. These articles together make no more than eleven shillings and three pence, and yet the merchants, by their great skill in multiplying charges, swell the account up to near thirty shillings a ton by that time it gets out of their hands, and they are continually adding more and more, as they serve us in our accounts of tobacco. He told me a strange thing about steel, that the making of the best remains at this day a profound secret in the breast of a very few, and therefore is in danger of being lost, as the art of staining of glass, and many others, have been. He could only tell me they used beech wood in the making of it in Europe, and burn it a considerable time in powder of charcoal; but the mystery lies in the liquor they quench it in. After dinner we took a walk to the furnace, which is elegantly built of brick, though the hearth be of fire-stone. There we saw the founder, Mr. Derham, who is paid four shillings for every ton of sow iron that he runs, which is a shilling cheaper than the last workman had. This operator looked a little melancholy, because he had nothing to do, the furnace having been cold ever since May, for want of corn to support the cattle. This was however no neglect of Mr. Chiswell, because all the persons he had contracted with had basely disappointed him. But having received a small supply, they intended to blow very soon. With that view they began to heat the furnace, which is six weeks before it comes to that intense heat required to run the metal in perfection. Nevertheless, they commonly begin to blow when the fire has been kindled a week or ten days. Close by the furnace stood a very spacious house full of charcoal, holding at least four hundred loads, which will be burnt out in three months. The company has contracted with Mr. Harry Willis to fall the wood, and then maul it and cut it into pieces of four feet in length, and bring it to the pits where it is to be coaled. All this he has undertaken to do for two shillings a cord, which must be four feet broad, four feet high, and eight feet long. Being thus carried to the pits, the



collier has contracted to coal it for five shillings a load, consisting of one hundred and sixty bushels. The fire in the furnace is blown by two mighty pairs of bellows, that cost one hundred pounds each, and these bellows are moved by a great wheel of twenty-six feet diameter. The wheel again is carried round by a small stream of water, conveyed about three hundred and fifty yards over land in a trough, from a pond made by a wooden dam. But there is great want of water in a dry season, which makes the furnace often blow out, to the great prejudice of the works. Having thus filled my head with all these particulars, we returned to the house, where, after talking of Col. Spotswood, and his stratagems to shake off his partners, and secure all his mines to himself, I retired to a homely lodging, which, like a homespun mistress, had been more tolerable, if it had been sweet.

26th. Over our tea, Mr. Chiswell told me the expense which the company had been already at amounted to near twelve thousand pounds: but then the land, negroes, and cattle were all included in that charge. However, the money began now to come in, they having run twelve hundred tons of iron, and all their heavy disbursements were over. Only they were still forced to buy great quantities of corn, because they had not strength of their own to make it. That they had not more than eighty negroes, and few of those Virginia born. That they need forty negroes more to carry on all the business with their own force. They have fifteen thousand acres of land, though little of it rich except in iron, and of that they have a great quantity. Mr. Fitzwilliam, took up the mine tract, and had the address to draw in the governor, Capt. Pearse, Dr. Nicolas and Mr. Chiswell to be jointly concerned with him, by which contrivance he first got a good price for the land, and then, when he had been very little out of pocket, sold his share to Mr. Nelson for five hundred pounds; and of these gentlemen the company at present consists. And Mr. Chiswell is the only person amongst them that knows any thing of the matter, and has one hundred pounds a year for looking after the works, and richly deserves it. After breaking our fast we took a walk to the principal mine, about a mile from the furnace, where they had sunk in some places about fifteen or twenty feet deep. The operator, Mr. Gordon, raised the ore, for which he was to have by contract one and sixpence per cart-load of twenty-six hundred weight. This man was obliged to hire all the laborers he wanted for this work of the company, after the rate of twenty-five shillings a month, and for all that was able to clear forty pounds a-year for himself. We saw here several large heaps of ore of two sorts, one of rich, and the other spongy and poor, which they melted together to make the metal more tough. The way of raising the ore was by blowing it up, which operation I saw here from beginning to end. They first drilled a hole in the mine, either upright or sloping, as the grain of it required. This hole they cleansed with a rag fastened to the end of an iron with a worm at the end of it. Then they put in a cartridge of powder containing about three ounces, and at the same time a reed full of fuse that reached to the powder. Then they rammed dry clay, or soft stone very hard into the hole, and lastly they fired the fuse with a paper that had been dipped in a solution of saltpetre and dried, which burning slow and sure, gave leisure to the engineer to retire to a proper distance before the explosion. This in the miner's language is called making a blast, which will loosen several hundred weight of ore at once; and afterwards the laborers easily separate it with pick-axes and carry it away in baskets up to the heap. At our return we saw near the furnace large heaps of mine with charcoal mixed with it, a stratum of each alternately, beginning first with a layer of charcoal at the bottom. To this they put fire, which in a little time spreads through the whole heap, and calcines the ore, which afterwards easily crumbles into

small pieces fit for the furnace. There was likewise a mighty quantity of limestone, brought from Bristol, by way of ballast, at two and sixpence a ton, which they are at the trouble to cart hither from Rappahannock river, but contrive to do it when the carts return from carrying of iron. They put this into the furnace with the iron ore, in the proportion of one ton of stone to ten of ore, with design to absorb the sulphur out of the iron, which would otherwise make it brittle. And if that be the use of it, oyster shells would certainly do as well as limestone, being altogether as strong an alkali, if not stronger. Nor can their being taken out of salt water be any objection, because it is pretty certain the West India limestone, which is thrown up by the sea, is even better than that imported from Bristol. But the founders who never tried either of these will by no means be persuaded to go out of their way, though the reason of the thing be never so evident. I observed the richer sort of mine, being of a dark colour mixed with rust, was laid in a heap by itself, and so was the poor, which was of a liver or brick colour. The sow iron is in the figure of a half-round, about two feet and a half-long, weighing sixty or seventy pounds, whereof three hundred weight make a cart-load drawn by eight oxen, which are commonly shod to save their hoofs in those stony ways. When the furnace blows, it runs about twenty tons of iron a week. The founders find it very hot work to tend the furnace, especially in summer, and are obliged to spend no small part of their earnings in strong drink to recruit their spirits. Besides the founder, the collier, and miner, who are paid in proportion to their work, the company have several other officers upon wages, a stock-taker, who weighs and measures every thing, a clerk, who keeps an account of all receipts and disbursements, a smith to shoe their cattle, and keep all their iron work in repair, a wheelwright, cartwright, carpenter, and several carters. The wages of all these persons amount to one hundred pounds a year; so that including Mr. Chiswell's salary, they disburse two hundred pounds per annum in standing wages. The provisions too are a heavy article, which their plantations do not yet produce in a sufficient quantity, though they are at the charge of a general overseer. But while corn is so short with them, there can be no great increase of stock of any kind.

27th. Having now pretty well exhausted the subject of sow iron, I asked my friend some questions about bar-iron. He told me we had as yet no forge erected in Virginia, though we had four furnaces. But there was a very good one set up at the head of the bay in Maryland, that made exceeding good work. He let me know that the duty in England upon bar iron was twenty-four shillings a ton, and that it sold there from ten to sixteen pounds a ton. This would pay the charge of forging abundantly, but he doubted the parliament of England would soon forbid us that improvement, lest after that we should go farther, and manufacture our bars into all sorts of iron ware, as they already do in New England and Pennsylvania. Nay, he questioned whether we should be suffered to cast any iron, which they can do themselves at their furnaces. Thus ended our conversation, and I thanked my friend for being so free in communicating every thing to me. Then, after tipping a pistole to the clerk, to drink prosperity to the mines with all the workmen, I accepted the kind offer of going part of my journey in the phaeton. I took my leave about ten, and drove over a spacious level road ten miles, to a bridge built over the river Po, which is one of the four branches of Matapony, about forty yards wide. Two miles beyond that, we passed by a plantation belonging to the company, of about five hundred acres, where they keep a great number of oxen to relieve those that have dragged their loaded carts thus far. Three miles farther we came to the Germanna road, where I quitted the chair, and continued my journey on horse-

back. I rode eight miles together over a stony road, and had on either side continual poisoned fields, with nothing but saplings growing on them. Then I came into the main county road, that leads from Fredericksburg to Germanna, which last place I reached in ten miles more. This famous town consists of Col. Spotswood's enchanted castle on one side of the street, and a baker's dozen of ruinous tenements on the other, where so many German families had dwelt some years ago; but are now removed ten miles higher, in the fork of Rappahannock, to land of their own. There had also been a chapel about a bow-shot from the colonel's house, at the end of an avenue of cherry trees, but some pious people had lately burnt it down, with intent to get another built nearer to their own homes. Here I arrived about three o'clock, and found only Mrs. Spotswood at home, who received her old acquaintance with many a gracious smile. I was carried into a room elegantly set off with pier glasses, the largest of which came soon after to an odd misfortune. Amongst other favourite animals that cheered this lady's solitude, a brace of tame deer ran familiarly about the house, and one of them came to stare at me as a stranger. But unluckily spying his own figure in the glass, he made a spring over the tea table that stood under it, and shattered the glass to pieces, and falling back upon the tea table, made a terrible fracas among the china. This exploit was so sudden, and accompanied with such a noise, that it surprised me, and perfectly frightened Mrs. Spotswood. But it was worth all the damage, to show the moderation and good humour with which she bore this disaster. In the evening the noble colonel came home from his mines, who saluted me very civilly, and Mrs. Spotswood's sister, Miss Theky, who had been to meet him *en cavalier*, was so kind too as to bid me welcome. We talked over a legend of old stories, supped about nine, and then prattled with the ladies, till it was time for a traveller to retire. In the mean time I observed my old friend to be very uxorious, and exceedingly fond of his children. This was so opposite to the maxims he used to preach up before he was married, that I could not forbear rubbing up the memory of them. But he gave a very good-natured turn to his change of sentiments, by alleging that whoever brings a poor gentlewoman into so solitary a place, from all her friends and acquaintance, would be ungrateful not to use her and all that belongs to her with all possible tenderness.

28th. We all kept snug in our several apartments till nine, except Miss Theky, who was the housewife of the family. At that hour we met over a pot of coffee, which was not quite strong enough to give us the palsy. After breakfast the colonel and I left the ladies to their domestic affairs, and took a turn in the garden, which has nothing beautiful but three terrace walks that fall in slopes one below another. I let him understand, that besides the pleasure of paying him a visit, I came to be instructed by so great a master in the mystery of making of iron, wherein he had led the way, and was the Tubal Cain of Virginia. He corrected me a little there, by assuring me he was not only the first in this country, but the first in North America, who had erected a regular furnace. That they ran altogether upon bloomeries in New England and Pennsylvania, till his example had made them attempt greater works. But in this last colony, they have so few ships to carry their iron to Great Britain, that they must be content to make it only for their own use, and must be obliged to manufacture it when they have done. That he hoped he had done the country very great service by setting so good an example. That the four furnaces now at work in Virginia circulated a great sum of money for provisions and all other necessaries in the adjacent counties. That they took off a great number of hands from planting tobacco, and employed them in works that produced a large sum of money in England to the persons concerned, whereby the country is so much the richer. That

they are besides a considerable advantage to Great Britain, because it lessens the quantity of bar iron imported from Spain, Holland, Sweden, Denmark and Muscovy, which used to be no less than twenty thousand tons yearly, though at the same time no sow iron is imported thither from any country but only from the plantations. For most of this bar iron they do not only pay silver, but our friends in the Baltic are so nice, they even expect to be paid all in crown pieces. On the contrary, all the iron they receive from the plantations, they pay for it in their own manufactures, and send for it in their own shipping. Then I inquired after his own mines, and hoped, as he was the first that engaged in this great undertaking, that he had brought them to the most perfection. He told me he had iron in several parts of his great tract of land, consisting of forty-five thousand acres. But that the mine he was at work upon was thirteen miles below Germanna. That his ore (which was very rich) he raised a mile from his furnace, and was obliged to cart the iron, when it was made, fifteen miles to Massaponux, a plantation he had upon Rappahannock river; but that the road was exceeding good, gently declining all the way, and had no more than one hill to go up in the whole journey. For this reason his loaded carts went it in a day without difficulty. He said it was true his works were of the oldest standing: but that his long absence in England, and the wretched management of Mr. Greame, whom he had entrusted with his affairs, had put him back very much. That what with neglect and severity, above eighty of his slaves were lost while he was in England, and most of his cattle starved. That his furnace stood still great part of the time, and all his plantations ran to ruin. That indeed he was rightly served for committing his affairs to the care of a mathematician, whose thoughts were always among the stars. That nevertheless, since his return, he had applied himself to rectify his steward's mistakes, and bring his business again into order. That now he had contrived to do every thing with his own people, except raising the mine and running the iron, by which he had contracted his expense very much. Nay, he believed that by his directions he could bring sensible negroes to perform those parts of the work tolerably well. But at the same time he gave me to understand, that his furnace had done no great feats lately, because he had been taken up in building an air furnace at Massaponux, which he had now brought to perfection, and should be thereby able to furnish the whole country with all sorts of cast iron, as cheap and as good as ever came from England. I told him he must do one thing more to have a full vent for those commodities, he must keep a shallop running into all the rivers, to carry his wares home to people's own doors. And if he would do that I would set a good example, and take off a whole ton of them. Our conversation on this subject continued till dinner, which was both elegant and plentiful. The afternoon was devoted to the ladies, who showed me one of their most beautiful walks. They conducted me through a shady lane to the landing, and by the way made me drink some very fine water that issued from a marble fountain, and ran incessantly. Just behind it was a covered bench, where Miss Theky often sat and bewailed her virginity. Then we proceeded to the river, which is the south branch of Rappahannock, about fifty yards wide, and so rapid that the ferry boat is drawn over by a chain, and therefore called the Rapidan. At night we drank prosperity to all the colonel's projects in a bowl of rack punch, and then retired to our devotions.

29th. Having employed about two hours in retirement, I sallied out at the first summons to breakfast, where our conversation with the ladies, like whip sillabub, was very pretty, but had nothing in it. This it seems was Miss Theky's birth day, upon which I made her my compliments, and wished she might live twice as long a married woman as she had lived a maid. I did

not presume to pry into the secret of her age, nor was she forward to disclose it, for this humble reason, lest I should think her wisdom fell short of her years. She contrived to make this day of her birth a day of mourning, for having nothing better at present to set her affections upon, she had a dog that was a great favourite. It happened that very morning the poor cur had done something very uncleanly upon the colonel's bed, for which he was condemned to die. However, upon her entreaty, she got him a reprieve; but was so concerned that so much severity should be intended on her birth day, that she was not to be comforted; and lest such another accident might oust the poor cur of his clergy, she protested she would board out her dog at a neighbour's house, where she hoped he would be more kindly treated. Then the colonel and I took another turn in the garden, to discourse farther on the subject of iron. He was very frank in communicating all his dear-bought experience to me, and told me very civilly he would not only let me into the whole secret, but would make a journey to James river, and give me his faithful opinion of all my conveniences. For his part he wished there were many more iron works in the country, provided the parties concerned would preserve a constant harmony among themselves, and meet and consult frequently, what might be for their common advantage. By this they might be better able to manage the workmen, and reduce their wages to what was just and reasonable. After this frank speech, he began to explain the whole charge of an iron work. He said, there ought at least to be a hundred negroes employed in it, and those upon good land would make corn, and raise provisions enough to support themselves and the cattle, and do every other part of the business. That the furnace might be built for seven hundred pounds, and made ready to go to work, if I went the nearest way to do it, especially since coming after so many, I might correct their errors and avoid their miscarriages. That if I had ore and wood enough, and a convenient stream of water to set the furnace upon, having neither too much nor too little water, I might undertake the affair with a full assurance of success. Provided the distance of carting be not too great, which is exceedingly burdensome. That there must be abundance of wheel carriages, shod with iron, and several teams of oxen, provided to transport the wood that is to be coaled, and afterwards the coal and ore to the furnace, and last of all the sow iron to the nearest water carriage, and carry back limestone and other necessaries from thence to the works; and a sloop also would be useful to carry the iron on board the ships, the masters not being always in the humour to fetch it. Then he enumerated the people that were to be hired, viz.: a founder, a mine-raiser, a collier, a stock-taker, a clerk, a smith, a carpenter, a wheelwright, and several carters. That these altogether will be a standing charge of about five hundred pounds a year. That the amount of freight, custom, commission and other charges in England, comes to twenty-seven shillings a ton. But that the merchants yearly find out means to inflame the account with new articles, as they do in those of tobacco. That, upon the whole matter, the expenses here and in England may be computed modestly at two pounds a ton. And the rest that the iron sells for will be clear gain, to pay for the land and negroes, which it is to be hoped will be three pounds more for every ton that is sent over. As this account agreed pretty near with that which Mr. Chiswell had given me, I set it down (notwithstanding it may seem a repetition of the same thing) to prove that both these gentlemen were sincere in their representations. We had a Michaelmas goose for dinner, of Miss Theky's own raising, who was now good-natured enough to forget the jeopardy of her dog. In the afternoon we walked in a meadow by the river side, which winds in the form of a horse-shoe about Germanna, making it a peninsula, containing about four hundred

acres. Rappahannock forks about fourteen miles below this place, the northern branch being the larger, and consequently must be the river that bounds my lord Fairfax's grant of the Northern Neck.

30th. The sun rose clear this morning, and so did I, and finished all my little affairs by breakfast. It was then resolved to wait on the ladies on horseback, since the bright sun, the fine air, and the wholesome exercise, all invited us to it. We forded the river a little above the ferry, and rode six miles up the neck to a fine level piece of rich land, where we found about twenty plants of ginseng, with the scarlet berries growing on the top of the middle stalk. The root of this is of wonderful virtue in many cases, particularly to raise the spirits and promote perspiration, which makes it a specific in colds and coughs. The colonel complimented me with all we found, in return for my telling him the virtues of it. We were all pleased to find so much of this king of plants so near the colonel's habitation, and growing too upon his own land; but were, however, surprised to find it upon level ground, after we had been told it grew only upon the north side of stony mountains. I carried home this treasure, with as much joy, as if every root had been a graft of the tree of life, and washed and dried it carefully. This airing made us as hungry as so many hawks, so that between appetite and a very good dinner, it was difficult to eat like a philosopher. In the afternoon the ladies walked me about amongst all their little animals, with which they amuse themselves, and furnish the table; the worst of it is, they are so tender-hearted, they shed a silent tear every time any of them are killed. At night the colonel and I quitted the threadbare subject of iron; and changed the scene to politics. He told me the ministry had receded from their demand upon New England, to raise a standing salary for all succeeding governors, for fear some curious members of the house of commons should inquire how the money was disposed of, that had been raised in the other American colonies for the support of their governors. And particularly what becomes of the four and a half per cent., paid in the sugar colonies for that purpose. That duty produces near twenty thousand pounds a year, but being remitted into the exchequer, not one of the West India governors is paid out of it; but they, like falcons, are let loose upon the people, who are complaisant enough to settle other revenues upon them, to the great impoverishing of these colonies. In the mean time, it is certain the money raised by the four and a half per cent. moulders away between the minister's fingers, no body knows how, like the quitrents of Virginia. And it is for this reason that the instructions, forbidding all governors to accept of any presents from their assemblies, are dispensed with in the sugar islands, while it is strictly insisted upon every where else, where the assemblies were so wise as to keep their revenues among themselves. He said further, that if the assembly in New England would stand bluff, he did not see how they could be forced to raise money against their will, for if they should direct it to be done by act of parliament, which they have threatened to do, (though it be against the right of Englishmen to be taxed, but by their representatives,) yet they would find it no easy matter to put such an act in execution. Then the colonel read me a lecture upon tar, affirming that it cannot be made in this warm climate, after the manner they make it in Sweden and Muscovy, by barking the tree two yards from the ground, whereby the turpentine descends all into the stump in a year's time, which is then split in pieces in order for the kiln. But here the sun fries out the turpentine in the branches of the tree, when the leaves are dried, and hinders it from descending. But, on the contrary, those who burn tar of lightwood in the common way, and are careful about it, make as good as that which comes from the east country, nor will it burn the cordage more than that does.

Then we entered upon the subject of hemp, which the colonel told me he never could raise here from foreign seed, but at last sowed the seed of wild hemp, (which is very common in the upper parts of the country) and that came up very thick. That he sent about five hundred pounds of it to England, and that the commissioners of the navy, after a full trial of it, reported to the lords of the admiralty, that it was equal in goodness to the best that comes from Riga. I told him if our hemp were never so good, it would not be worth the making here, even though they should continue the bounty. And my reason was, because labour is not more than two pence a day in the east country where they produce hemp, and here we cannot compute it at less than ten pence, which being five times as much as their labour, and considering besides, that our freight is three times as dear as theirs, the price that will make them rich will ruin us, as I have found by woful experience. Besides, if the king, who must have the refusal, buys our hemp, the navy is so long in paying both the price and the bounty, that we who live from hand to mouth cannot afford to wait so long for it. And then our good friends, the merchants, load it with so many charges, that they run away with great part of the profit themselves. Just like the bald eagle, which after the fishing hawk has been at great pains to catch a fish, pounces upon and takes it from him. Our conversation was interrupted by a summons to supper, for the ladies, to show their power, had by this time brought us tamely to go to bed with our bellies full, though we both at first declared positively against it. So very pliable a thing is frail man, when women have the bending of him.

October 1st. Our ladies overslept themselves this morning, so that we did not break our fast till ten. We drank tea made of the leaves of ginseng, which has the virtues of the root in a weaker degree, and is not disagreeable. So soon as we could force our inclinations to quit the ladies, we took a turn on the terrace walk, and discoursed upon quite a new subject. The colonel explained to me the difference betwixt the galleons and the flota, which very few people know. The galleons, it seems, are the ships which bring the treasure and other rich merchandise to Carthagea from Portobel, to which place it is brought over land, from Panama and Peru. And the flota is the squadron that brings the treasure, &c., from Mexico and New Spain, which make up at La Vera Cruz. Both these squadrons rendezvous at the Havanna, from hence they shoot the gulf of Florida, in their return to Old Spain. That this important port of the Havanna is very poorly fortified, and worse garrisoned and provided, for which reason it may be easily taken. Besides, both the galleons and flota, being confined to sail through the gulf, might be intercepted by our stationing a squadron of men of war at the most convenient of the Bahama islands. And that those islands are of vast consequence for that purpose. He told me also that the azogue ships are they that carry quicksilver to Portobello and La Vera Cruz, to refine the silver, and that, in Spanish, azogue signifies quicksilver. Then my friend unridled to me the great mystery, why we have endured all the late insolences of the Spaniards so tamely. The asiento contract, and the liberty of sending a ship every year to the Spanish West Indies, make it very necessary for the South Sea Company to have effects of great value in that part of the world. Now these being always in the power of the Spaniards, make the directors of that company very fearful of a breach, and consequently very generous in their offers to the ministry to prevent it. For fear these worthy gentlemen should suffer, the English squadron, under Admiral Hosier, lay idle at the Bastimentos, till the ships' bottoms were eaten out by the worm, and the officers and men, to the number of five thousand, died like rotten sheep, without being suffered, by the strictest orders, to strike one stroke, though

they might have taken both the flota and galleons, and made themselves masters of the Havanna into the bargain, if they had not been chained up from doing it. All this moderation, our peaceable ministry showed even at a time when the Spaniards were furiously attacking Gibraltar, and taking all the English ships they could, both in Europe and America, to the great and everlasting reproach of the British nation. That some of the ministry, being tired out with the clamours of the merchants, declared their opinion for war, and while they entertained those sentiments they pitched upon him, Col. Spotswood, to be governor of Jamaica, that by his skill and experience in the art military, they might be the better able to execute their design of taking the Havanna. But the courage of these worthy patriots soon cooled, and the arguments used by the South Sea directors, persuaded them once again into more pacific measures. When the scheme was dropped, his government of Jamaica was dropped at the same time, and then general Hunter was judged fit enough to rule that island in time of peace. After this the colonel endeavoured to convince me that he came fairly by his place of postmaster-general, notwithstanding the report of some evil disposed persons to the contrary. The case was this, Mr. Hamilton, of New Jersey, who had formerly had that post, wrote to Col. Spotswood, in England, to favour him with his interest to get it restored to him. But the colonel, considering wisely that charity began at home, instead of getting the place for Hamilton, secured it for a better friend: though, as he tells the story, that gentleman was absolutely refused, before he spoke the least good word for himself.

2d. This being the day appointed for my departure from hence, I packed up my effects in good time; but the ladies, whose dear companies we were to have to the mines, were a little tedious in their equipment. However, we made a shift to get into the coach by ten o'clock; but little master, who is under no government, would by all means go on horseback. Before we set out I gave Mr. Russel the trouble of distributing a pistole among the servants, of which I fancy the nurse had a pretty good share, being no small favourite. We drove over a fine road to the mines, which lie thirteen measured miles from the Germanna, each mile being marked distinctly upon the trees. The colonel has a great deal of land in his mine tract exceedingly barren, and the growth of trees upon it is hardly big enough for coaling. However, the treasure under ground makes amends, and renders it worthy to be his lady's jointure. We lighted at the mines, which are a mile nearer to Germanna than the furnace. They raise abundance of ore there, great part of which is very rich. We saw his engineer blow it up after the following manner. He drilled a hole about eighteen inches deep, humouring the situation of the mine. When he had dried it with a rag fastened to a worm, he charged it with a cartridge containing four ounces of powder, including the priming. Then he rammed the hole up with soft stone to the very mouth; after that he pierced through all with an iron called a primer, which is taper and ends in a sharp point. Into the hole the primer makes the priming is put, which is fired by a paper moistened with a solution of saltpetre. And this burns leisurely enough, it seems, to give time for the persons concerned to retreat out of harm's way. All the land hereabouts seems paved with iron ore; so that there seems to be enough to feed a furnace for many ages. From hence we proceeded to the furnace, which is built of rough stone, having been the first of that kind erected in the country. It had not blown for several moons, the colonel having taken off great part of his people to carry on his air furnace at Massaponux. Here the wheel that carried the bellows was no more than twenty feet diameter; but was an overshot wheel that went with little water. This was necessary here, because water is



something scarce, notwithstanding it is supplied by two streams, one of which is conveyed one thousand and nine hundred feet through wooden pipes, and the other sixty. The name of the founder employed at present is one Godfrey, of the kingdom of Ireland, whose wages is three shillings and sixpence per ton for all the iron he runs, and his provisions. This man told me that the best wood for coaling is red oak. He complained that the colonel starves his works out of whimsicalness and frugality, endeavouring to do every thing with his own people, and at the same time taking them off upon every vagary that comes into his head. Here the coal carts discharge their load at folding doors, made at the bottom, which is sooner done, and shatters the coal less. They carry no more than one hundred and ten bushels. The colonel advised me by all means to have the coal made on the same side the river with the furnace, not only to avoid the charge of boating and bags, but likewise to avoid breaking of the coals, and making them less fit for use. Having picked the bones of a sirloin of beef, we took leave of the ladies, and rode together about five miles, where the roads parted. The colonel took that to Massaponux, which is fifteen miles from his furnace, and very level, and I that to Fredericksburg, which cannot be less than twenty. I was a little benighted, and should not have seen my way, if the lightning, which flashed continually in my face, had not befriended me. I got about seven o'clock to Col. Harry Willis's, a little moistened with the rain; but a glass of good wine kept my pores open, and prevented all rheums and defluxions for that time.

3d. I was obliged to rise early here, that I might not starve my landlord, whose constitution requires him to swallow a beef-steak before the sun blesses the world with its genial rays. However, he was so complaisant as to bear the gnawing of his stomach, till eight o'clock for my sake. Col. Waller, after a score of loud hems to clear his throat, broke his fast along with us. When this necessary affair was despatched, Col. Willis walked me about his town of Fredericksburg. It is pleasantly situated on the south shore of Rappahannock river, about a mile below the falls. Sloops may come up and lie close to the wharf, within thirty yards of the public warehouses, which are built in the figure of a cross. Just by the wharf is a quarry of white stone that is very soft in the ground, and hardens in the air, appearing to be as fair and fine grained as that of Portland. Besides that, there are several other quarries in the river bank, within the limits of the town, sufficient to build a large city. The only edifice of stone yet built is the prison; the walls of which are strong enough to hold Jack Sheppard, if he had been transported thither. Though this be a commodious and beautiful situation for a town, with the advantages of a navigable river, and wholesome air, yet the inhabitants are very few. Besides Col. Willis, who is the top man of the place, there are only one merchant, a tailor, a smith and an ordinary keeper; though I must not forget Mrs. Levistone, who acts here in the double capacity of a doctress and coffee woman. And were this a populous city, she is qualified to exercise two other callings. It is said the court-house and the church are going to be built here, and then both religion and justice will help to enlarge the place. Two miles from this place is a spring strongly impregnated with alum, and so is the earth all about it. This water does wonders for those that are afflicted with a dropsy. And on the other side the river, in King George county, twelve miles from hence, is another spring of strong steel water, as good as that at Tunbridge Wells. Not far from this last spring are England's iron mines, called so from the chief manager of them, though the land belongs to Mr. Washington. These mines are two miles from the furnace, and Mr. Washington raises the ore, and carts it thither for twenty shillings the ton of iron that it yields. The furnace is built

on a run, which discharges its waters into Potomac. And when the iron is cast, they cart it about six miles to a landing on that river. Besides Mr. Washington and Mr. England, there are several other persons, in England, concerned in these works. Matters are very well managed there, and no expense is spared to make them profitable, which is not the case in the works I have already mentioned. Mr. England can neither write nor read; but without those helps, is so well skilled in iron works, that he does not only carry on his furnace, but has likewise the chief management of the works at Principia, at the head of the bay, where they have also erected a forge and make very good bar iron. Col. Willis had built a flue to try all sorts of ore in, which was contrived after the following manner. It was built of stone four feet square with an iron grate fixed in the middle of it for the fire to lie upon. It was open at the bottom, to give a free passage to the air up to the grate. Above the grate was another opening that carried the smoke into a chimney. This makes a draught upward, and the fire rarifying the air below, makes another draught underneath, which causes the fire to burn very fiercely, and melt any ore in the crucibles that are set upon the fire. This was erected by a mason called Taylor, who told me he built the furnace at Fredericksville, and came in for that purpose at three shillings and sixpence a day, to be paid him from the time he left his house in Gloucestershire, to the time he returned thither again, unless he chose rather to remain in Virginia after he had done his work. It happened to be court day here, but the rain hindered all but the most quarrelsome people from coming. The colonel brought three of his brother justices to dine with us, namely, John Talifero, major Lightfoot, and captain Green, and in the evening parson Kenner edified us with his company, who left this parish for a better, without any regard to the poor souls he had half saved, of the flock he abandoned.

4th. The sun rising very bright, invited me to leave this infant city; accordingly, about ten, I took leave of my hospitable landlord, and persuaded parson Kenner to be my guide to Massaponux, lying five miles off, where I had agreed to meet Col. Spotswood. We arrived there about twelve, and found it a very pleasant and commodious plantation. The colonel received us with open arms, and carried us directly to his air furnace, which is a very ingenious and profitable contrivance. The use of it is to melt his sow iron, in order to cast it into sundry utensils, such as backs for chimneys, andirons, fenders, plates for hearths, pots, mortars, rollers for gardeners, skillets, boxes for cart wheels; and many other things, which, one with another, can be afforded at twenty shillings a ton, and delivered at people's own homes. And, being cast from the sow iron, are much better than those which come from England, which are cast immediately from the ore for the most part. Mr. Flowry is the artist that directed the building of this ingenious structure, which is contrived after this manner. There is an opening about a foot square for the fresh air to pass through from without. This leads up to an iron grate that holds about half a bushel of sea coal, and is about six feet higher than the opening. When the fire is kindled, it rarefies the air in such a manner as to make a very strong draught from without. About two feet above the grate is a hole that leads into a kind of oven, the floor of which is laid shelving towards the mouth. In the middle of this oven, on one side, is another hole that leads into the funnel of a chimney, about forty feet high. The smoke mounts up this way, drawing the flame after it with so much force, that in less than an hour it melts the sows of iron that are thrust towards the upper end of the oven. As the metal melts it runs towards the mouth into a hollow place, out of which the potter lades it in iron ladles, in order to pour it into the several moulds just by. The mouth of the oven

is stopped close with a moveable stone shutter, which he removes so soon as he perceives, through the peep holes, that the iron is melted. The inside of the oven is lined with soft bricks, made of Sturbridge or Windsor clay, because no other will endure the intense heat of the fire. And over the floor of the oven they strew sand taken from the land, and not from the water side. This sand will melt the second heat here, but that which they use in England will bear the fire four or five times. The potter is also obliged to plaster over his ladles with the same sand moistened, to save them from melting. Here are two of these air furnaces in one room, that so in case one wants repair, the other may work, they being exactly of the same structure. The chimneys and other outside work of this building are of free-stone, raised near a mile off, on the colonel's own land. And were built by his servant, whose name is Kerby, a very complete workman. This man disdains to do any thing of rough work, even where neat is not required, lest any one might say hereafter, Kerby did it. The potter was so complaisant as to show me the whole process, for which I paid him and the other workmen my respects in the most agreeable way. There was a great deal of ingenuity in the framing of the moulds, wherein they cast the several utensils, but without breaking them to pieces, I found there was no being let into that secret. The flakes of iron that fall at the mouth of the oven are called geets, which are melted over again. The colonel told me, in my ear, that Mr. Robert Cary, in England, was concerned with him, both in this and his other iron works, not only to help support the charge, but also to make friends to the undertaking at home. His honour has settled his cousin, Mr. Greame, here as postmaster, with a salary of sixty pounds a year, to reward him for having ruined his estate while he was absent. Just by the air furnace stands a very substantial wharf, close to which any vessel may ride in safety. After satisfying our eyes with all these sights, we satisfied our stomachs with a sirloin of beef, and then the parson and I took leave of the colonel, and left our blessing upon all his works. We took our way from thence to major Woodford's, seven miles off, who lives upon a high hill that affords an extended prospect. On which account it is dignified with the name of Windsor. There we found Rachel Cocke, who stayed with her sister some time, that she might not lose the use of her tongue in this lonely place. We were received graciously, and the evening was spent in talking and toping, and then the parson and I were conducted to the same apartment, the house being not yet finished.

5th. The parson slept very peaceably, and gave me no disturbance, so I rose fresh in the morning, and did credit to the air by eating a hearty breakfast. Then major Woodford carried me to the house where he cuts tobacco. He manufactures about sixty hogsheads yearly, for which he gets after the rate of eleven pence a pound, and pays himself liberally for his trouble. The tobacco he cuts is long green, which, according to its name, bears a very long leaf, and consequently each plant is heavier than common sweet-scented or Townsend tobacco. The worst of it is the veins of the leaf are very large, so that it loses its weight a good deal by stemming. This kind of tobacco is much the fashion in these parts, and Jonathan Forward (who has great interest here) gives a good price for it. This sort the major cuts up, and has a man that performs it very handily. The tobacco is stemmed clean in the first place, and then laid straight in a box, and pressed down hard by a press that goes with a nut. This box is shoved forward towards the knife by a screw, receiving its motion from a treadle, that the engineer sets a-going with his foot. Each motion pushes the box the exact length which the tobacco ought to be of, according to the saffron or oblong cut, which it seems yields one penny in a pound more at London than the square cut, though

at Bristol they are both of equal price. The man strikes down the knife once at every motion of the screw, so that his hand and foot keep exact pace with each other. After the tobacco is cut in this manner, it is sifted first through a sand riddle, and then through a dust riddle, till it is perfectly clean. Then it is put into a tight hogshead, and pressed under the nut, till it weighs about a thousand net. One man performs all the work after the tobacco is stemmed, so that the charge bears no proportion to the profit. One considerable benefit from planting long green tobacco is, that it is much harder, and less subject to fire than other sweet scented, though it smells not altogether so fragrant. I surprised Mrs. Woodford in her housewifery in the meat-house, at which she blushed as if it had been a sin. We all walked about a mile in the woods, where I showed them several useful plants, and explained the virtues of them. This exercise, and the fine air we breathed in, sharpened our appetites so much that we had no mercy on a rib of beef that came attended with several other good things at dinner. In the afternoon, we tempted all the family to go along with us to major Ben. Robinson's, who lives on a high hill, called Moon's Mount, about five miles off. On the road we came to an eminence, from whence we had a plain view of the mountains, which seemed to be no more than thirty miles from us, in a straight line, though, to go by the road, it was near double that distance. The sun had just time to light us to our journey's end, and the major received us with his usual good humour. He has a very industrious wife, who has kept him from sinking by the weight of gaming and idleness. But he is now reformed from those ruinous qualities, and by the help of a clerk's place, in a quarrelsome county, will soon be able to clear his old scores. We drank exceeding good cider here, the juice of the white apple, which made us talkative till ten o'clock, and then I was conducted to a bed-chamber, where there was neither chair nor table; however, I slept sound, and waked with strong tokens of health in the morning.

6th. When I got up about sunrise, I was surprised to find that a fog had covered this high hill; but there is a marsh on the other side the river that sends its filthy exhalation up to the clouds. On the borders of that morass lives Mr. Lomax, a situation fit only for frogs and otters. After fortifying myself with toast and cider, and sweetening my lips with saluting the lady, I took leave, and the two majors conducted me about four miles on my way, as far as the church. After that, Ben. Robinson ordered his East Indian to conduct me to Col. Martin's. In about ten miles, we reached Caroline court-house, where Col. Armstead and Col. Will. Beverley, have each of them erected an ordinary, well supplied with wine and other polite liquors, for the worshipful bench. Besides these, there is a rum ordinary for persons of a more vulgar taste. Such liberal supplies of strong drink often make Justice nod, and drop the scales out of her hands. Eight miles beyond the ordinary, I arrived at Col. Martin's, who received me with more gravity than I expected. But, upon inquiry, his lady was sick, which had lengthened his face and gave him a very mournful air. I found him in his night-cap and banian, which is his ordinary dress in that retired part of the country. Poorer land I never saw than what he lives upon; but the wholesomeness of the air, and the goodness of the roads, make some amends. In a clear day the mountains may be seen from hence, which is, in truth, the only rarity of the place. At my first arrival, the colonel saluted me with a glass of good Canary, and soon after filled my belly with good mutton and cauliflowers. Two people were as indifferent company as a man and his wife, without a little inspiration from the bottle; and then we were forced to go to the kingdom of Ireland, to help out our conversation. There, it seems, the colonel had an elder brother, a physician, who threatens him with an estate some time or another; though possibly it might come to him sooner if the succession depended on the death of

one of his patients. By eight o'clock at night we had no more to say, and I gaped wide as a signal for retiring, whereupon I was conducted to a clean lodging, where I would have been glad to exchange one of the beds for a chimney.

7th. This morning Mrs. Martin was worse, so that there were no hopes of seeing how much she was altered. Nor was this all, but the indisposition of his consort made the colonel intolerably grave and thoughtful. I prudently ate a meat breakfast, to give me spirits for a long journey, and a long fast. My landlord was so good as to send his servant along with me, to guide me through all the turnings of a difficult way. In about four miles we crossed Mattaponi river at Norman's ford, and then slanted down to King William county road. We kept along that for about twelve miles, as far as the new brick church. After that I took a blind path, that carried me to several of Col. Jones's quarters, which border upon my own. The colonel's overseers were all abroad, which made me fearful I should find mine as idle as they. But I was mistaken, for when I came to Gravel Hall, the first of my plantations in King William, I found William Snead (that looks after three of them) very honestly about his business. I had the pleasure to see my people all well, and my business in good forwardness. I visited all the five quarters on that side, which spent so much of my time, that I had no leisure to see any of those on the other side the river; though I discoursed Thomas Tinsley, one of the overseers, who informed me how matters went. In the evening Tinsley conducted me to Mrs. Sym's house, where I intended to take up my quarters. This lady, at first suspecting I was some lover, put on a gravity that becomes a weed; but so soon as she learned who I was, brightened up into an unusual cheerfulness and serenity. She was a portly, handsome dame, of the family of Esau, and seemed not to pine too much for the death of her husband, who was of the family of the Saracens. He left a son by her, who has all the strong features of his sire, not softened in the least by any of hers, so that the most malicious of her neighbours cannot bring his legitimacy in question, not even the parson's wife, whose unruly tongue, they say, does not spare even the reverend doctor, her husband. This widow is a person of a lively and cheerful conversation, with much less reserve than most of her countrywomen. It becomes her very well, and sets off her other agreeable qualities to advantage. We tossed off a bottle of honest Port, which we relished with a broiled chicken. At nine I retired to my devotions, and then slept so sound that fancy itself was stupified, else I should have dreamed of my most obliging landlady.

8th. I moistened my clay with a quart of milk and tea, which I found altogether as great a help to discourse as the juice of the grape. The courteous widow invited me to rest myself there that good day, and go to church with her, but I excused myself, by telling her she would certainly spoil my devotion. Then she civilly entreated me to make her house my home whenever I visited my plantations, which made me bow low, and thank her very kindly. From thence I crossed over to Shaccoe's, and took Thomas Tinsley for my guide, finding the distance about fifteen miles. I found every body well at the Falls, blessed be God, though the bloody flux raged pretty much in the neighbourhood. Mr. Booker had received a letter the day before from Mrs. Byrd, giving an account of great desolation made in our neighbourhood, by the death of Mr. Lightfoot, Mrs. Soan, Capt. Gerald and Col. Henry Harrison. Finding the flux had been so fatal, I desired Mr. Booker to make use of the following remedy, in case it should come amongst my people. To let them bleed immediately about eight ounces; the next day to give them a dose of Indian physic, and to repeat the vomit again the day following, unless the symptoms abated. In the mean time,

they should eat nothing but chicken broth, and poached eggs, and drink nothing but a quarter of a pint of milk boiled with a quart of water, and medicated with a little mullein root, or that of the prickly pear, to restore the mucus of the bowels, and heal the excoriation. At the same time, I ordered him to communicate this method to all the poor neighbours, and especially to my overseers, with strict orders to use it on the first appearance of that distemper, because in that, and all other sharp diseases, delays are very dangerous. I also instructed Mr. Booker in the way I had learned of blowing up the rocks, which were now drilled pretty full of holes, and he promised to put it in execution. After discoursing seriously with the father about my affairs, I joked with the daughter in the evening, and about eight retired to my castle, and recollected all the follies of the day, the little I had learned, and the still less good I had done.

9th. My long absence made me long for the domestic delights of my own family, for the smiles of an affectionate wife, and the prattle of my innocent children. As soon as I sallied out of my castle, I understood that Col. Carter's Sam was come, by his master's leave, to show my people how to blow up the rocks in the canal. He pretended to great skill in that matter, but performed very little, which however might be the effect of idleness rather than ignorance. He came upon one of my horses, which he tied to a tree at Shacco's, where the poor animal kept a fast of a night and a day. Though this fellow worked very little at the rocks, yet my man, Argalus, stole his trade, and performed as well as he. For this good turn, I ordered Mr. Samuel half a pistole, all which he laid out with a New England man for rum, and made my weaver and spinning woman, who has the happiness to be called his wife, exceedingly drunk. To punish the varlet for all these pranks, I ordered him to be banished from thence for ever, under the penalty of being whipped home, from constable to constable, if he presumed to come again. I left my memoranda with Mr. Booker, of every thing I ordered to be done, and mounted my horse about ten, and in little more reached Bermuda Hundred, and crossed over to Col. Carter's. He, like an industrious person, was gone to oversee his overseers at North Wales, but his lady was at home, and kept me till supper time before we went to dinner. As soon as I had done justice to my stomach, I made my honours to the good humoured little fairy, and made the best of my way home, where I had the great satisfaction to find all that was dearest to me in good health, nor had any disaster happened in the family, since I went away. Some of the neighbours had worm fevers, with all the symptoms of the bloody flux; but, blessed be God! their distempers gave way to proper remedies.

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